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ESTABLISHED 1842

# AMERICAN AGRICULTURIST YEAR BOOK AND ALMANAC

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A Complete Reference Work  
for the Farms and Homes  
of America. An Indispens-  
able Business Guide and  
Almanac for 1905

*Prepared under the direction  
of the President and Editor*

HERBERT MYRICK

ORANGE JUDD COMPANY

SPRINGFIELD

NEW YORK

CHICAGO

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## Almanac Calculations for 1905

The year 1905 comprises the latter part of the 129th and the beginning of the 130th year of American Independence, and corresponds to the year 6618 of the Julian Period; the year 5665-5666 of the Jewish era (the year 5666 begins at sunset on September 29); the year 2658 since the foundation of Rome, according to Varro; the year 2565 of the Japanese era, and to the 38th year of the period entitled "Meiji."

### Morning and Evening Stars

The Planet Venus will be Evening Star until April 27, and then Morning Star the balance of the year.

The Planet Mars is Morning Star till May 8, after which date he is Evening Star to end of the year.

The Planet Jupiter begins as Evening Star and continues as such until May 4, after which date he is Morning Star until November 24, and then Evening Star the rest of the year.

### Church Days

Epiphany,	Jan. 6	Easter Sunday,	Apr. 23
Septuagesima Sunday,	Feb. 19	Low Sunday,	Apr. 30
Sexagesima Sunday,	Feb. 26	Rogation Sunday,	May 28
Quinquagesima Sunday,	Mar. 5	Ascension Day,	June 1
Shrove Tuesday,	Mar. 7	Whit Sunday,	June 11
Ash Wednesday,	Mar. 8	Trinity Sunday,	June 18
Quadragesima Sunday,	Mar. 12	Corpus Christi,	June 22
Palm Sunday,	Apr. 16	Advent Sunday,	Dec. 3
Good Friday,	Apr. 21	Christmas Day,	Dec. 25

### Eclipses

I. A partial eclipse of the Moon February 19; invisible here, but the beginning visible in eastern Europe and Africa, and all of Asia and Australia, and the end visible throughout the whole of Europe, Asia, Africa and Australia.

II. An annular eclipse of the Sun March 5; not visible here, but visible in Australia and a large portion of the South Pacific and Indian oceans.

III. A partial eclipse of the Moon August 14-15; visible here, the beginning visible generally in North and South America, Europe and Africa, and the ending generally throughout the whole of North and South America and the extreme western portion of Africa. Time of the eclipse is as follows (Eastern standard time): Moon enters penumbra August 14d., 8m. p. m.; Moon enters shadow August 14d., 9h., 39m., p. m.; middle of eclipse August 14d., 10h., 41m., p. m.; Moon leaves shadow August 14d., 11h., 43m., p. m.; Moon leaves penumbra August 15d., 1h., 14m., a. m. For Central time, deduct one hour.

IV. A total eclipse of the Sun August 30; visible here as a partial eclipse, the Sun rising eclipsed. The path of totality will run through Labrador, the North Atlantic ocean, thence across Spain and Portugal, and thence across the Mediterranean, through northwestern Africa.

## THE INFLUENCE OF THE MOON.

By PROF. DAVID TODD.

The changes of the Moon's phases are popularly supposed to affect the weather, though this fact has not been absolutely proved. The following table, ascribed to the great astronomer, Sir William Herschel, based on the variation of the attraction of the Sun and Moon in their several positions with respect to the Earth, has been confided in a great many cases:

If it be new or full Moon or the Moon enters into the first or last quarter at:	The weather will be:	
	In summer—	In winter—
Noon .....	Very rainy	Snow and rain
From 2 to 4 p m .....	Changeable	Fair and mild
4 to 6 .....	Fair	Fair
6 to 8 .....	Fair, wind N W	Fair, wind N or N E
8 to 10 .....	Rain, wind S W	Rain, wind S or S W
10 to 12 .....	Fair, wind N W	Fair, wind N or N E
12 to 2 a m .....	Rain, wind S W	Rain, wind S or S W
2 to 4 .....	Fair	Fair and frosty
4 to 6 .....	Cold and showers	Hard frost, unless wind S
6 to 8 .....	Rain	Snow and stormy
8 to 10 .....	Wind and rain	Snow and stormy
10 to noon .....	Changeable	Stormy
	Showers	Snow or rain
		Cold, high wind

Thin clouds are frequently observed to break away about the time of full moon. A ring around the Moon is a sign of a storm within 36 hours. The times of the Moon's phases may be found in the Almanac under each month.

The Tides are due to the influence of the Moon, and to that of the Sun in a lesser degree. That part of the ocean directly under the Moon is affected more strongly by the Moon's attraction than the body of the Earth is, and hence is drawn away from it slightly. For the same reason, the Earth is attracted a little more than the water on the side opposite the Moon. Thus the water tends to bulge out and form Flood Tides at the points nearest and opposite the Moon. Midway between there will be low water or Ebb Tides. Because of the Earth's rotation, every place has two high tides and two low tides in a little over a day. The highest tides or Spring Tides occur at the time of new or full moon, while the lowest or Neap Tides are found at quadrature. In the former, the Sun and Moon are in the same or opposite directions, while in the latter case the action of one is at right angles to that of the other, so that they tend to neutralize each other.

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## EXPLANATION OF ASTRONOMICAL TABLES FOR 1905.

[Prepared by Prof. David Todd, Director Amherst College Observatory,  
and Robert H. Baker, Assistant.]

Under each month are given the astronomical phenomena which occur during the month. The name of the month appears at the top of the page and the day in the first column.

**MOON SOUTHS**—The time in hours and minutes when the center of the Moon passes the Meridian or is due south in the heavens. This is Eastern standard time and is approximately correct for the longitude of Philadelphia. For St. Louis, add two minutes, for Denver four and San Francisco six minutes.

**RISES BEFORE OR SETS AFTER SUN**—The difference in time, given in hours and minutes, between the rising and setting of the Sun and that of the planets Mercury and Venus.

**LIGHT AND DARK** between 6 p. m. and 6 a. m.—The chart shows the amount of Darkness and of Moonlight or Sunlight between 6 p. m. and 6 a. m. A strip corresponds to each day of the month and is divided into squares representing two hours. The figures at the top of the diagram show the time in hours. The shaded portions represent the time when there is neither sunlight nor moonlight. The unshaded parts show the time when either Sun or Moon is visible. During the Summer months, the Sun rises before 6 a. m. and sets after 6 p. m., so that then the light encroaches upon both edges of the chart.

**PLANETARY CONFIGURATIONS**—The Moon makes a complete circuit of the heavens every month and during that time passes all the planets. The times of these occurrences are given, as well as the time when the Moon is highest and lowest in the sky and when it is nearest and farthest from the Earth. The date of a planet's entering a new constellation is noted in this column and also the time of its near approach to a bright star. Unless specified as (sign), the constellation is meant. The time is Eastern standard time. For the middle states subtract one hour, for the western states two hours, for the Pacific coast three hours.

**POSITIONS OF SUN AND PLANETS**—The constellations in which these objects appear on the first day of the month.

**METEOR SHOWERS**—The days during which these showers of Meteors or Shooting Stars appear, also the Radiant or point in the sky from which they appear to come, and the character of the Meteors—slow, bright, etc. The most conspicuous showers are starred (\*).

**MORNING AND EVENING STARS**—Planets rising before Sun are called Morning Stars, setting after Sun, Evening Stars.

**MINIMA OF ALGOL**—Every third Minimum or time of least brightness of Algol is here given, except in May and June, when the star is near the Sun. Time the same as in Planetary Configurations.

**WHEN POLARIS IS NORTH**—Polaris is over two Moon-breadths from the true pole of the heavens, and hence is exactly north but twice a day—when it passes the meridian above or below the pole. The times given are Eastern standard time.

*Wm. D. ...*  
*1905*

# 1st Month. JANUARY. 1905.

Moon's Phases.	Eastern Time.			Central Time.			Mountain Time.		
	D.	H.	M.	D.	H.	M.	D.	H.	M.
New Moon .....	6	1	17 Even.	5	0	17 Even.	5	11	17 Morn.
First Quarter .....	13	3	11 Even.	13	2	11 Even.	13	1	11 Even.
Full Moon .....	21	2	14 Morn.	21	1	14 Morn.	21	0	14 Morn.
Last Quarter .....	27	7	20 Even.	27	6	20 Even.	27	5	20 Even.

Day of Mo.	Day of Wk.	Light and Dark Moon	Moon's Place.	Calendar—N. States.			Calendar—S. States.			Weather Forecasts.
				Lat. 42° +			Lat. 35° +			
				Sun Rises	Sun Sets	Moon Rises	Sun Rises	Sun Sets	Moon Rises	
H. M.	H. M.	H. M.	H. M.	H. M.	H. M.					
1	Sun.	☾	♈	7 30	4 39	3 4	7 3	5 5	2 49	Cold wave. Freezing weather in Florida and the Gulf Coast.
2	Mo.	☾	♈	7 30	4 40	4 11	7 3	5 6	3 52	
3	Tu.	☾	♈	7 30	4 40	5 15	7 3	5 7	4 53	
4	We.	☾	♈	7 30	4 41	6 16	7 3	5 8	5 51	Mild period. Soft, foggy weather in Southwest. Blustery in New England.
5	Th.	☾	♈	7 30	4 42	sets.	7 3	5 8	sets.	
6	Fri.	☾	♈	7 30	4 43	5 51	7 3	5 9	6 13	
7	Sat.	☾	♈	7 30	4 44	6 50	7 3	5 10	7 10	Storm wave. Stormy weather prevailing at all points. Great Flood in Tennessee river.
8	Sun.	☾	♈	7 29	4 45	7 50	7 3	5 11	8 6	
9	Mo.	☾	♈	7 29	4 46	8 50	7 3	5 12	9 2	
10	Tu.	☾	♈	7 29	4 47	9 51	7 3	5 13	9 58	Cold period. Cold, blustery weather over Northwest and Lakeregion.
11	We.	☾	♈	7 29	4 48	10 50	7 3	5 13	10 51	
12	Th.	☾	♈	7 29	4 49	11 45	7 3	5 14	11 42	
13	Fri.	☾	♈	7 28	4 50	morn	7 3	5 15	morn	Mild period. Pleasant weather over West and Northwest sections.—Sunny days over N. Eng. States.
14	Sat.	☾	♈	7 28	4 51	0 45	7 3	5 16	0 36	
15	Sun.	☾	♈	7 27	4 52	1 45	7 3	5 17	1 32	
16	Mo.	☾	♈	7 27	4 54	2 44	7 2	5 18	2 27	Storm wave. Rain-fall over region extending from Gulf to lower Appalachian mts.
17	Tu.	☾	♈	7 26	4 55	3 44	7 2	5 19	3 23	
18	We.	☾	♈	7 26	4 57	4 44	7 2	5 19	4 21	
19	Th.	☾	♈	7 25	4 58	5 42	7 2	5 20	5 18	Cold wave. Decidedly colder weather at all points West and Northwest.
20	Fri.	☾	♈	7 25	4 59	rises.	7 1	5 21	rises.	
21	Sat.	☾	♈	7 24	5 0	5 43	7 1	5 22	6 3	
22	Sun.	☾	♈	7 24	5 1	6 54	7 1	5 23	7 10	Bright period. Brilliant weather prevailing at all points.
23	Mo.	☾	♈	7 23	5 2	8 8	7 0	5 24	8 17	
24	Tu.	☾	♈	7 22	5 4	9 23	7 0	5 25	9 27	
25	We.	☾	♈	7 22	5 5	10 33	6 59	5 26	10 31	
26	Th.	☾	♈	7 21	5 7	11 44	6 59	5 27	11 36	
27	Fri.	☾	♈	7 20	5 8	morn	6 58	5 28	morn	
28	Sat.	☾	♈	7 19	5 9	0 54	6 57	5 29	0 41	
29	Sun.	☾	♈	7 18	5 10	2 3	6 57	5 30	1 44	
30	Mo.	☾	♈	7 17	5 11	3 7	6 56	5 31	2 46	
31	Tu.	☾	♈	7 16	5 13	4 8	6 55	5 32	3 44	

ASTRONOMY FOR JANUARY, 1905.

Eastern Standard Time—75th Meridian.

Moon Rises before or souths sets after Sun  
 For Pac Mercury Venus coast rises sets add .6 m before after  
 Light and dark between 6 p m and 6 a m  
 Eve Morn

Date a m	H M	H M	6	8	10	12	2	4	6
1	8 26	0 22	3	25					
2	9 19	0 32	3	28					
3	10 13	0 41	3	30					
4	11 7	0 50	3	31					
5	p m	0 58	3	31					
6	12 53	1 6	3	32					
7	1 42	1 13	3	36					
8	2 29	1 19	3	35					
9	3 14	1 23	3	36					
10	3 58	1 28	3	37					
11	4 40	1 31	3	37					
12	5 22	1 35	3	40					
13	6 5	1 37	3	39					
14	6 49	1 37	3	40					
15	7 35	1 38	3	43					
16	8 23	1 39	3	43					
17	9 15	1 40	3	43					
18	10 9	1 39	3	44					
19	11 6	1 38	3	44					
20	a m	1 38	3	46					
21	12 3	1 37	3	47					
22	1 1	1 36	3	47					
23	1 57	1 34	3	47					
24	2 52	1 31	3	48					
25	3 46	1 30	3	48					
26	4 39	1 28	3	48					
27	5 31	1 26	3	49					
28	6 23	1 24	3	51					
29	7 16	1 21	3	51					
30	8 9	1 19	3	52					
31	9 2	1 17	3	51					

Planetary configurations and other phenomena

- Mars near Alpha Virginis.
- Venus enters Aquarius.
- Earth nearest Sun.
- 12 m Moon lowest—passes Uranus.
- 4th, 6 p m Moon passes Mercury.
- 11 p m Mercury farthest N of Sun.
- Jupiter passes Mu Piscium.
- 9 a m Moon passes Saturn.
- 10 a m Moon passes Venus.
- 5 a m Mercury stationary.
- 4 p m Jupiter 90 Degrees from Sun.
- 11 a m Moon passes Jupiter.
- 8 a m Mercury passes Uranus.
- Saturn passes Gamma Capricorni.
- 1 a m Moon occults Gamma Tauri.
- 7 a m Moon highest.
- 19th, 9 a m Moon passes Neptune.
- Sun in Capricornus.
- 2 p m Mercury farthest W of Sun.
- Mars passes Lambda Virginis.
- Venus in Pisces.
- Mars enters Libra.
- 8 a m Venus crosses Ecliptic.
- 30th, 10 a m Mercury crosses Ecliptic.

Positions of Sun and Planets on Jan 1

	Constellation
Sun	Sagittarius
Mercury	Sagittarius
Venus	Capricornus
Mars	Virgo
Jupiter	Pisces
Saturn	Capricornus
Uranus	Sagittarius
Neptune	Gemini

Meteor Showers

Date	Radiant	Meteors
2-3*	Quadrans	swift
2-4	Cancer	
14-20	Cygnus	slow
18-28	Corona	swift

Morning stars	Evening stars
Mercury	Venus
Mars	Jupiter
Uranus	Saturn
	Neptune

Minima of Algol

Date	Time
Jan 2	6 21 a m
10	8 48 p m
19	11 15 a m
28	1 42 a m

When Polaris Is North

Date	Time
Jan 1	6 43 a m
6	6 41 p m
10	6 8
29	5 29
30	4 49
4	4 47

Moon farthest from Earth, 11th, 8 p m.  
 Moon nearest the Earth, 23d 1 p m.

For intermediate dates add 2d 20h 49m.

Polaris due north twice a day—when passing meridian. For intermediate dates add 1h 52m.





**NORTH**—Too many farmers think there is nothing to do, since all vegetation is dormant. Although the soil is in no condition to work, there is plenty of work to be done. It is a good time to foot up accounts, figure out where the losses, as well as profits came in last year, and lay new plans which will decrease the losses and increase the profits. What buildings or fences must be built or remodeled, what land, if any, should be drained, what stock to keep, how to improve the pastures, which meadows should be broken up, what crops to raise, etc., should be studied. When the spring work opens, each day will have its problems and there will be little time to look and plan ahead. Now is a good time to cut and house firewood for the year. Keep a watchful eye on fowls and farm animals, give them lots of attention; they will repay you well. Animals well wintered are half summered. Harvest your ice and pack it closely in the icehouse. Keep the snow packed around your fruit trees or use netting to keep mice away from the bark. Large poultrymen will be busy with incubators. Gardeners haul manure, muck and lime into convenient places for spring work. Keep the snow shoveled off the glass of greenhouses, hotbeds and forcing pits. Lettuce sown under glass will come to market in April, radishes in March. Some pruning of fruit trees may be done on warm days. Asparagus and rhubarb should be top-dressed if not already done. Order seed catalogs. Take an active part in the grange, farm institutes, and all social gatherings. Encourage the young people to attend these meetings and keep up reading circles.

**SOUTH**—Fallowing is the order of the day. Spring work should be pushed. In bad weather work on tobacco which has not yet been stripped. If the season is early, oats may be sown. If the ground can't be worked, build and remodel fences, buildings, etc. If not already done, put in the year's supply of wood. Grind the scythe and sections, get the plow, drag, roller, etc., in first-class condition. Shell your seed corn. Look after the water supply for the stock, fix up the creek, clean out the ponds, make new ones and see to it that there is abundance of water conveniently located. In hot weather, free access of your stock to water is co-ordinate with good pasture. Ornamental shrubs and grapevines may be trimmed and staked or tied as desired. Look after the lawn, give it some fertilizer. If any hens want to sit, give them some good, fresh, fertile eggs. They will hatch out some profitable chicks, if a little extra care is given. Sow onions, turnips and radishes; fall sown lettuce may be transplanted. Earth up celery, top-dress asparagus beds. Early cabbage, lettuce and peas may be put out. Cultivate cauliflower and broccoli. Endive should be ready for market. Spinach, carrots, parsley, beets, kale and collards would do well planted now. Set out onion sets. Give the garden a good start.

2d Month.

FEBRUARY.

1905.

Moon's Phases.	Eastern Time.			Central Time.			Mountain Time.		
	D.	H.	M.	D.	H.	M.	D.	H.	M.
New Moon .....	4	6	6 Morn.	4	5	6 Morn.	4	4	6 Morn.
First Quarter.....	12	11	20 Morn.	12	10	26 Morn.	12	9	20 Morn.
Full Moon.....	19	1	52 Even.	19	0	52 Even.	19	11	52 Morn.
Last Quarter.....	26	6	4 Morn.	28	4	4 Morn.	26	8	4 Morn.

Day of Mo.	Day of Wk.	Light and Dark Moon	Moon's Place.	Calendar—N. States.			Calendar—S. States.			Weather Forecasts.
				Lat. 42° +			Lat. 35° +			
				Sun Rises	Sun Sets	Moon Rises	Sun Rises	Sun Sets	Moon Rises	
H. M.	H. M.	H. M.	H. M.	H. M.	H. M.					
1	We.	☾	♏	7 15	5 14	5 3	6 54	5 33	4 39	Heavysnow. Snow blockades.
2	Th.	☾	♏	7 14	5 15	5 53	6 54	5 34	5 29	
3	Fri.	☾	♏	7 13	5 17	6 34	6 53	5 35	6 13	
4	Sat.	☾	♏	7 12	5 18	sets.	6 52	5 36	sets.	Cold wave. Intense cold covering all Western, Central and Eastern sections.
5	Sun.	☾	♏	7 10	5 19	6 39	6 51	5 37	6 52	
6	Mo.	☾	♏	7 9	5 20	7 39	6 51	5 38	7 48	Unsettled period.
7	Tu.	☾	♏	7 8	5 22	8 38	6 50	5 39	8 42	Rain, sleet and snow in Central States and New England.
8	We.	☾	♏	7 7	5 23	9 37	6 49	5 40	9 34	
9	Th.	☾	♏	7 6	5 24	10 33	6 49	5 41	10 26	
10	Fri.	☾	♏	7 4	5 25	11 32	6 48	5 42	11 21	
11	Sat.	☾	♏	7 3	5 27	morn	6 47	5 43	morn	Windy period. Dangerous gales over Lake region and along N. Atlan. coast.
12	Sun.	☾	♏	7 2	5 28	0 31	6 46	5 44	0 15	
13	Mo.	☾	♏	7 0	5 29	1 30	6 45	5 44	1 11	
14	Tu.	☾	♏	6 58	5 31	2 27	6 44	5 45	2 5	
15	We.	☾	♏	6 57	5 32	3 26	6 43	5 46	3 2	Mild period. Pleasant weather in Central, Southern and Eastern sections.
16	Th.	☾	♏	6 56	5 33	4 21	6 42	5 47	3 57	
17	Fri.	☾	♏	6 55	5 35	5 12	6 41	5 48	4 50	
18	Sat.	☾	♏	6 54	5 36	5 59	6 39	5 48	5 39	
19	Sun.	☾	♏	6 53	5 37	rises.	6 38	5 49	rises.	Storm wave. Great southw't storms travelling from Texas to N. England. Rain in the South.
20	Mo.	☾	♏	6 51	5 38	6 59	6 37	5 50	7 6	
21	Tu.	☾	♏	6 49	5 40	8 16	6 36	5 51	8 16	
22	We.	☾	♏	6 48	5 41	9 27	6 35	5 52	9 22	
23	Th.	☾	♏	6 46	5 42	10 42	6 34	5 52	10 30	
24	Fri.	☾	♏	6 45	5 43	11 53	6 33	5 53	11 37	Mild period. General weather, with clear, starlight nights and sunny days South and West.
25	Sat.	☾	♏	6 43	5 44	morn	6 32	5 54	morn	
26	Sun.	☾	♏	6 41	5 46	1 1	6 31	5 55	0 40	
27	Mo.	☾	♏	6 39	5 47	2 2	6 30	5 56	1 39	
28	Tu.	☾	♏	6 38	5 48	3 0	6 29	5 56	2 35	

FEBRUARY, 1905.

Eastern Standard Time—75th Meridian.

Moon Rises before or  
souths sets after Sun Light and dark

For Pac Mercury Venus between 6 p m  
coast rises sets and 6 a m  
add 6 m before after Eve Morn

Date	a m	H M	H M	6	8	10	12	2	4	6
1	9 55	1 15	3 52							
2	10 46	1 13	3 52							
3	11 36	1 10	3 53							
4	p m	1 8	3 53							
5	1 10	1 5	3 53							
6	1 54	1 2	3 53							
7	2 36	0 59	3 53							
8	3 19	0 56	3 53							
9	4 1	0 54	3 54							
10	4 44	0 51	3 54							
11	5 28	0 48	3 53							
12	6 14	0 46	3 54							
13	7 3	0 43	3 54							
14	7 55	0 42	3 55							
15	8 49	0 39	3 54							
16	9 45	0 37	3 54							
17	10 43	0 34	3 54							
18	11 41	0 32	3 54							
19	a m	0 29	3 55							
20	1 38	0 27	3 54							
21	1 31	0 26	3 55							
22	2 29	0 24	3 55							
23	3 23	0 20	3 54							
24	4 17	0 18	3 54							
25	5 11	0 17	3 54							
26	6 5	0 14	3 53							
27	6 59	0 12	3 53							
28	7 51	0 11	3 53							

Planetary  
configurations  
and other  
phenomena

6 a m	Moon lowest
9 a m	Moon passes Mercury. Saturn near Delta Capricorni.
11 p m	Moon passes Saturn.
	Mercury enters Capricornus.
6 a m	Moon passes Juno.
3 p m	Mercury farthest from Sun.
1 a m	Moon passes Jupiter.
	Mars passes Alpha Librac.
3 p m	Saturn near Sun.
	Sun enters Aquarius.
6 p m	Venus farthest E of Sun.
6 p m	Moon highest—passes Neptune.
	(invisible in U S)
19th	Moon partially eclipsed
• a m	Sun enters Pisces (sign).
7 a m	Moon occults Beta Virginis. Saturn enters Aquarius. Mercury enters Aquarius.
1 p m	Mercury passes Saturn.
24th, 7 p m	Moon passes Mars.
5 a m	Mercury passes Iota Aquarii. Jupiter enters Aries.
9 a m	Moon lowest—passes Uranus.

Positions of Sun and  
Planets on Feb 1

Planet	Constellation
Sun	Capricornus
Mercury	Sagittarius
Venus	Pisces
Mars	Libra
Jupiter	Pisces
Saturn	Capricornus
Uranus	Sagittarius
Neptune	Gemini

Meteor Showers

Date	Radiant	Meteors
5-10	Auriga	slow
15	Serpens	swift
20	Leo	bright
20	Hercules	swift

Morning stars	Evening stars
Mercury	Venus
Mars	Jupiter
Saturn	Saturn
(after 12th)	(until 12th)
Uranus	Neptune

Minima of Algal

Date	Time
Feb 5	4 9 p m
14	6 36 a m
22	9 3 p m

When Polaris Is North

Date	Time
Feb 1	4 41 a m 4 39 p m
10	3 56 3 54
20	5 29 5 27
30	4 49 4 47

Moon farthest from  
Earth, 8th, 3 p m.  
Moon nearest the  
Earth, 20th, 7 p m.

For intermediate dates  
add 2d 20h 49m.

For intermediate dates  
add 11h 58m.



## FEBRUARY.

**NORTH**—Continue uncompleted operations of January. This is one of the coldest months and greenhouses should be given much attention. Little ventilation is required, except an hour or so in the middle of the day. Let heated air out rather than cold in. Avoid hot, dry atmosphere. Syringe for red spider; use tobacco for aphids. Bring out the hyacinths and other bulbs from the dark cellar, if they have a liberal root system. Trim trees, cut scions, order nursery stock and sow seeds in window boxes. Look out for the fine manure supply, and have plenty on hand for early vegetables. Add plenty of water to prevent firefanging. Tomatoes, cauliflower, cabbage, lettuce, pepper, eggplant, etc., should be started under glass the last of the month. Lettuce sown now will be ready for market in May, radishes in April. Early cabbage may be started. Poultrymen and dairy farmers should give special attention to providing exercise, clean, warm quarters and nourishing food for their charges. Watch the sheep; an hour at midnight may save three or four early lambs. Run the incubator on full time and encourage hens to sit. Glance over tools, seeds and fertilizers to see that all is in readiness for the spring rush.

**SOUTH**—This is the best month for planting fruit trees and plants of all kind, especially strawberries, raspberries, blackberries, pears and apples. Grapevines may be planted now or a month later. Get your nursery order in very early. One of the great weaknesses of the south is the incapacity of nurserymen to furnish sufficient good, strong plants. Northern plants are frozen up at this time, and makes importation tardy. Still, with good care and proper attention to planting, watering, shading, etc., good results are obtained, even with this handicap of obtaining northern grown stock. It is always best to take a plant from cold to warm climate rather than vice versa. Plant Irish potatoes, peas, squashes, melons, sweet corn, carrots, radishes, parsnips, spinach, salsify. Beets may be sown. Tend to asparagus beds. Transplant early cabbage and lettuce. In favorable localities beans and corn will do well planted now. These may require little protection a few nights, but results will more than repay. A popular superstition makes St. Valentine's day the best time for planting nearly all vegetables. As far north as Kentucky and Virginia, celery and tomatoes are sown for plants about the middle of the month. Sow oats and clover and fallowing is not out of season. Start the plow, especially on turf land, for corn and cotton. Continue stripping tobacco. Do not forget the stock. Cultivate fruits if good results are wanted, and keep up through the growing season. If new tools or any repairing is needed, attend to it at once. It is well to have duplicate tools of the leading sorts. Then no time will be lost by the breaking of the fork, spade, hoe, etc. Time lost in this way is often worth more than three or four times the cost of the implement.

3d Month.

MARCH.

1905.

Moon's Phases.		Eastern Time.			Central Time.			Mountain Time.		
		D.	H.	M.	D.	H.	M.	D.	H.	M.
New Moon .....		6	0	19 Morn.	5	11	19 Even.	5	10	19 Even.
First Quarter .....		14	3	59 Morn.	14	2	59 Morn.	14	1	59 Morn.
Full Moon .....		20	11	56 Even.	20	10	56 Even.	20	9	56 Even.
Last Quarter .....		27	4	35 Even.	27	3	35 Even.	27	2	35 Even.

Day of Mo.	Day of Wk.	Light and Dark Moon	Moon's Place.	Calendar—N. States.			Calendar—S. States.			Weather Forecasts.
				Lat. 42° +			Lat. 83° +			
				Sun Rises	Sun Sets.	Moon Rises.	Sun Rises	Sun Sets.	Moon Rises.	
H. M.	H. M.	H. M.	H. M.	H. M.	H. M.					
1	We.	☾	♏	6 36	5 50	3 55	6 27	5 57	3 26	Storm wave. Great storm energy moving from the Gulf of Mexico to N. England.
2	Th.	☾	♏	6 34	5 52	4 33	6 26	5 58	4 11	
3	Fri.	☾	♏	6 32	5 53	5 13	6 25	5 59	4 53	
4	Sat.	☾	♏	6 30	5 54	5 46	6 24	6 0	5 31	
5	Sun.	☾	♏	6 28	5 55	6 16	6 23	6 0	6 5	
6	Mo.	☾	♏	6 27	5 57	sets.	6 21	6 1	sets.	
7	Tu.	☾	♏	6 25	5 58	7 28	6 20	6 2	7 28	
8	We.	☾	♏	6 24	5 59	8 25	6 19	6 3	8 20	
9	Th.	☾	♏	6 23	6 0	9 24	6 18	6 4	9 15	
10	Fri.	☾	♏	6 20	6 1	10 22	6 17	6 5	10 9	
11	Sat.	☾	♏	6 19	6 2	11 20	6 15	6 5	11 3	
12	Sun.	☾	♏	6 17	6 4	morn	6 14	6 6	11 57	Blustery period. Wind in Southern, Central and East'n sections. Pleasant period. Mild weather in Northern, Central and Eastern sections. High winds. Dangerous gales over the Gulf and the South Atlantic States. Warm wave. High temperatures for March in Central, South'n and Western States. Storm wave. Rain storms over Arkansas, Missouri, Kentucky and Ohio. Cold wave. Abrupt fall in temperature at all points in North-west'n, Cen. and Eastern States. Mild period. Pleasant weather east of the Mississippi river.
13	Mo.	☾	♏	6 16	6 6	0 18	6 13	6 7	morn	
14	Tu.	☾	♏	6 13	6 7	1 15	6 12	6 7	0 51	
15	We.	☾	♏	6 12	6 8	2 9	6 10	6 8	1 45	
16	Th.	☾	♏	6 10	6 9	3 0	6 9	6 9	2 37	
17	Fri.	☾	♏	6 8	6 10	3 48	6 8	6 10	3 27	
18	Sat.	☾	♏	6 6	6 11	4 31	6 6	6 10	4 14	
19	Sun.	☾	♏	6 5	6 12	5 12	6 5	6 11	4 59	
20	Mo.	☾	♏	6 3	6 13	rises.	6 4	6 12	rises.	
21	Tu.	☾	♏	6 1	6 14	7 4	6 2	6 13	7 1	
22	We.	☾	♏	5 59	6 15	8 18	6 1	6 13	8 9	
23	Th.	☾	♏	5 58	6 16	9 34	6 0	6 14	9 20	
24	Fri.	☾	♏	5 56	6 17	10 46	5 59	6 15	10 27	
25	Sat.	☾	♏	5 54	6 18	11 52	5 57	6 16	11 30	
26	Sun.	☾	♏	5 52	6 19	morn	5 56	6 16	morn	
27	Mo.	☾	♏	5 51	6 21	0 54	5 55	6 17	0 30	
28	Tu.	☾	♏	5 49	6 22	1 47	5 53	6 18	1 23	
29	We.	☾	♏	5 47	6 23	2 33	5 52	6 19	2 10	
30	Th.	☾	♏	5 45	6 24	3 14	5 51	6 19	2 54	
31	Fri.	☾	♏	5 44	6 25	3 50	5 49	6 20	3 32	

MARCH, 1905.

Eastern Standard Time—75th Meridian.

Moon Rises before or south sets after Sun Light and dark For Pac Mercury Venus between 6 p m coast rises sets and 6 a m and 6 a m

Date	a m		H M		Eve		Morn	
	6	8	10	12	2	4	6	
1	8	43	0	10	3	53		
2	9	32	0	7	3	52		
3	10	20	0	4	3	51		
4	11	6	0	2	3	51		
5	11	51			3	50		
6		p m			3	51		
7	1	16	Sets		3	50		
8	1	58	after		3	49		
9	2	41			3	48		
10	3	24	0	2	3	48		
11	4	9	0	6	3	46		
12	4	56	0	10	3	44		
13	5	45	0	15	3	43		
14	6	37	0	21	3	42		
15	7	30	0	25	3	41		
16	8	25	0	30	3	39		
17	9	22	0	35	3	37		
18	10	19	0	40	3	36		
19	11	15	0	46	3	34		
20		a m	0	51	3	33		
21	12	11	0	56	3	31		
22	1	8	1	1	3	29		
23	2	4	1	5	3	27		
24	3	0	1	11	3	26		
25	3	59	1	15	3	23		
26	4	52	1	20	3	20		
27	5	46	1	23	3	17		
28	6	39	1	27	3	15		
29	7	30	1	30	3	12		
30	8	18	1	32	3	8		
31	9	5	1	36	3	5		

Planetary configurations and other phenomena

12 a m Mercury farthest S of Sun.  
 Venus enters Aries.  
 11 p m Venus nearest Sun.  
 5 p m Moon passes Mercury.  
 5th Annular eclipse of Sun (invis).  
 8 p m Moon passes Juno.  
 11 p m Mercury passes Sun.  
 Sun enters Pisces.  
 Mercury enters Pisces.  
 10 p m Moon occults Theta Tauri.  
 Saturn near Iota Aquarii.  
 3 a m Moon highest—passes Neptune.  
 9 p m Neptune stationary.  
 21st, 12 a m Mercury crosses Ecliptic.  
 21st, 2 a m Sun enters Aries.  
 5 p m Venus brightest.  
 2 p m Moon passes Mars.  
 3 p m Mercury nearest Sun.  
 7 p m Venus farthest N of Sun.  
 1 p m Moon passes Uranus.  
 27th, 3 p m Moon lowest.  
 Mercury enters Aries.  
 11 p m Moon passes Saturn.

Positions of Sun and Planets on Mar 1

Planet	Constellation
Sun	Aquarius
Mercury	Aquarius
Venus	Pisces
Mars	Libra
Jupiter	Aries
Saturn	Aquarius
Uranus	Sagittarius
Neptune	Gemini

Moon farthest from Earth, 6th, 2 a m.  
 Moon nearest the Earth, 21st, 6 a m.

Meteor Showers

Date	Radiant	Meteors
1-4	Leo	slow
14	Draco	swift
24	Ursa Major	swift
28	Draco	

Minima of Algal

Date	Time
Mar 3	11 30 a m
12	1 58 a m
20	4 24 p m
29	6 50 a m

For intermediate dates add 2d 20h 49m.

Morning stars Evening stars

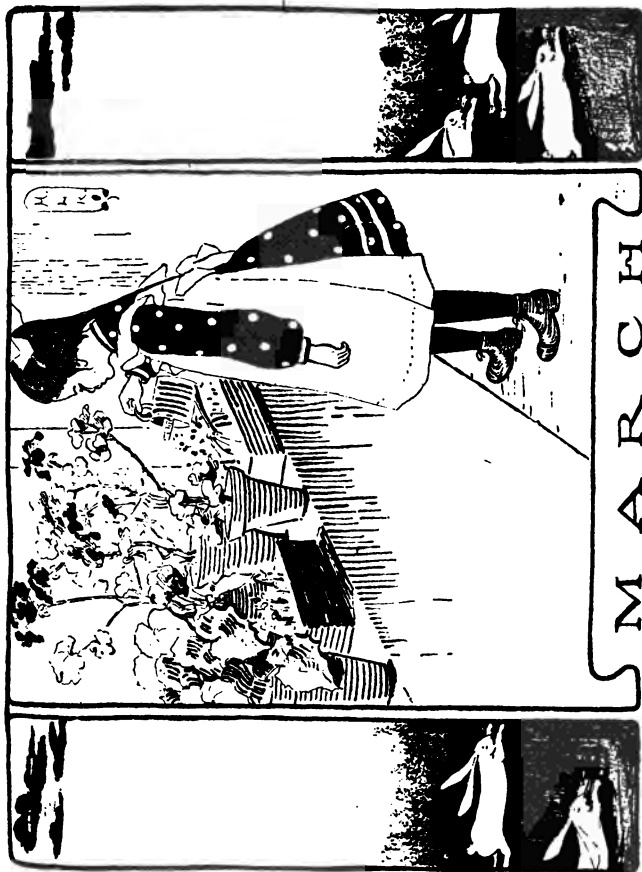
Mercury (until 9th)	Mercury (after 9th)
Saturn	Venus
Uranus	Mars
	Jupiter
	Neptune

When Polaris is North

Date	Time
Mar 1	2 51 a m 2 49 p m
10	2 15 2 13
20	1 36 1 34
30	12 56 12 54

For intermediate dates add 11h 58m.





## MARCH.

**NORTH**—The weather is still uncertain and many winter operations may be continued, such as wood cutting, drawing and spreading manure, repairing machinery, mending harnesses, completing the stock of seeds, fertilizers, marketing produce, etc. Brighter sunshine and longer days will begin to show their good effects on plants in the greenhouse. Repot all plants which have large root systems. Continue spraying for red spider and use tobacco and sulphur on the pipes for insects. Fruit trees in light, dry soils may be safely planted in some sections. Get stock from the nearest reliable nurseryman who knows the importance of having roots properly protected. This is the busy season for vegetables. Hotbeds must be started and seeds of the hardier vegetables may be sown in the open ground in locations where the frost is out and ground dry. Asparagus, cabbage, cauliflower, carrot, leek, lettuce, onion, parsnip, peas, squash, turnip, etc., may be planted. In New England, tomatoes, pepper, cauliflower seeds, are sown under glass first of the month. However, in the latitude of New York and Philadelphia, outside planting is usually safe as above, and asparagus and rhubarb are transplanted. Cabbage and cauliflower sown in February should be transplanted when four leaves show. Lettuce, cabbage and cauliflower should have a temperature of 60 to 70 degrees, and tomatoes 10 degrees higher. Vine and bush pruning and fence mending are in order. Lawns may now be raked off and top-dressed (if not done in the fall) with short manure or rich garden earth mixed with one-tenth part of bone dust or similar fertilizer, where manure is not obtainable. On light soils, flower beds may be dug up so as to promote planting in the busy season. Clean up the cellar and throw out all refuse vegetables. Sprout the potatoes and put a few in a light place for early planting, where green sprouts will start.

**SOUTH**—Tender vegetables may now be safely sown, such as eggplant, okra, melon, squash and tomatoes. If not already planted in the hotbed look after sweet potatoes. Plant rice, millet, sugar cane, sorghum and kafir corn. In favorable locations, watermelons, cantaloupes and squashes may be safely put out. Early planted corn and vegetables should receive cultivation. Sow wheat and clover, rebed cotton land and plant cotton. Fruit trees can be set out. Hardy vegetables, including onions, leeks, turnips and potatoes, may be put out, if not done last month. Mustard for salad should be sown every two weeks. Parsley and tomatoes may be sown in the open ground and hot-bed plants may be set in the field. Cabbages and collards may be transplanted, as also tomatoes and beets. Peas and beans for succession should be planted. Beets, turnips, etc., sown last month should be thinned and cultivated. Sow early celery and spinach. Set out strawberry beds. In the latitude of Kentucky and Tennessee, gardeners are busy sowing the earliest vegetables, including celery, parsley and parsnip. Potatoes are also planted the latter part of the month. Eggplant seed is sown under glass. Extra farm stock may be secured. Many hire three or four more than necessary and turn off the poor ones.

4th Month.

APRIL.

1905.

Moon's Phases.			Eastern Time.			Central Time.			Mountain Time.		
			D.	H.	M.	D.	H.	M.	D.	H.	M.
New Moon	.....		4	6	23 Even.	4	5	23 Even.	4	4	23 Even.
First Quarter	.....		12	4	41 Even.	12	3	41 Even.	12	2	41 Even.
Full Moon	.....		19	8	38 Morn.	19	7	38 Morn.	19	6	38 Morn.
Last Quarter	.....		26	6	14 Morn.	26	5	14 Morn.	26	4	14 Morn.

Day of Mo.	Day of Wk.	Light and Dark Moon	Moon's Place.	Calendar—N. States.			Calendar—S. States.			Weather Forecasts.
				Lat. 42° +			Lat. 33° +			
				Sun Rises	Sun Sets	Moon Rises	Sun Rises	Sun Sets	Moon Rises	
H. M.	H. M.	H. M.	H. M.	H. M.	H. M.					
1	Sat.	☾	♊	5 42	6 26	4 20	5 48	6 21	4 7	Coal wave. Unsettled weather over West'n, Cen. and So'n sect'ns. Snow storms in Northwest. Killing frosts. Sharp frosts in Western, Central and Middle Atlantic States. Storm wave. Heavy rain throughout the lower Miss. Val. and Ohio Riv. Basin. Sultry period.— Warm weather for April over east Gulf and So. Atlantic States. Unsettled period. Damp, cloudy and foggy over eastern half of United States. Thunder storms. Tornadoes and wind and rain storms in Texas and Oklahoma. Warm wave. Hot, sultry conditions at all points south 40th parallel. Summer-like in Central States.
2	Sun.	☾	♊	5 40	6 27	4 48	5 47	6 22	4 39	
3	Mo.	☾	♋	5 39	6 28	5 13	5 45	6 22	5 10	
4	Tu.	☾	♋	5 37	6 29	5 41	5 44	6 23	5 42	
5	We.	☾	♋	5 35	6 31	sets.	5 43	6 24	sets.	
6	Th.	☾	♌	5 33	6 32	8 16	5 42	6 24	8 4	
7	Fri.	☾	♌	5 32	6 33	9 14	5 40	6 25	8 57	
8	Sat.	☾	♌	5 30	6 34	10 13	5 39	6 26	9 52	
9	Sun.	☾	♌	5 28	6 35	11 9	5 38	6 26	10 46	
10	Mo.	☾	♍	5 27	6 36	morn	5 37	6 27	11 39	
11	Tu.	☾	♍	5 25	6 37	0 4	5 35	6 28	morn	
12	We.	☾	♍	5 23	6 39	0 55	5 34	6 28	0 30	
13	Th.	☾	♍	5 22	6 40	1 42	5 33	6 29	1 20	
14	Fri.	☾	♎	5 20	6 41	2 26	5 32	6 30	2 7	
15	Sat.	☾	♎	5 19	6 42	3 7	5 30	6 30	2 52	
16	Sun.	☾	♎	5 17	6 43	3 43	5 29	6 31	3 33	
17	Mo.	☾	♏	5 15	6 44	4 17	5 28	6 32	4 13	
18	Tu.	☾	♏	5 14	6 45	4 53	5 27	6 32	4 57	
19	We.	☾	♏	5 12	6 46	rises.	5 26	6 33	rises.	
20	Th.	☾	♏	5 11	6 47	8 23	5 24	6 34	8 5	
21	Fri.	☾	♏	5 9	6 49	9 34	5 23	6 35	9 13	
22	Sat.	☾	♐	5 8	6 50	10 40	5 22	6 35	10 17	
23	Sun.	☾	♐	5 6	6 51	11 40	5 21	6 36	11 15	
24	Mo.	☾	♐	5 6	6 52	morn	5 20	6 37	morn	
25	Tu.	☾	♑	5 5	6 53	0 31	5 19	6 38	0 7	
26	We.	☾	♑	5 5	6 54	1 14	5 18	6 38	0 52	
27	Th.	☾	♑	5 0	6 55	1 51	5 17	6 39	1 32	
28	Fri.	☾	♑	4 59	6 56	2 24	5 15	6 40	2 9	
29	Sat.	☾	♑	4 58	6 57	2 53	5 14	6 41	2 42	
30	Sun.	☾	♑	4 56	6 59	3 18	5 13	6 41	3 12	

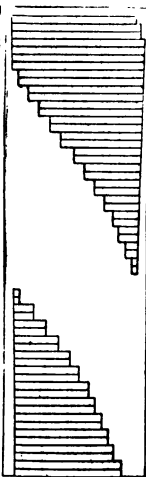
APRIL, 1905.

Eastern Standard Time—75th Meridian.

Moon Rises before or souths sets after Sun  
 For Pac Mercury Venus  
 coast sets sets  
 add 6 m after after  
 Light and dark  
 between 6 p m  
 and 6 a m

Planetary  
 configurations  
 and other  
 phenomena

Date	a m		H M		Eve Morn					
	6	8	10	12	2	4	6			
1	9 49	1 38	3 0							
2	10 33	1 39	2 57							
3	11 15	1 40	2 53							
4	11 57	1 40	2 47							
5	p m	1 40	2 44							
6	1 23	1 39	2 38							
7	2 7	1 39	2 31							
8	2 53	1 36	2 28							
9	3 41	1 34	2 23							
10	4 31	1 30	2 17							
11	5 23	1 26	2 11							
12	6 16	1 22	2 4							
13	7 10	1 17	1 58							
14	8 4	1 13	1 52							
15	8 59	1 7	1 45							
16	9 54	1 0	1 37							
17	10 49	0 54	1 30							
18	11 45	0 46	1 23							
19	a m	0 39	1 15							
20	12 42	0 31	1 7							
21	1 40	0 22	0 59							
22	2 37	0 12	0 50							
23	3 34	Rises	0 41							
24	4 30	before	0 34							
25	5 23	0 12	0 25							
26	6 14	0 16	Rises							
27	7 2	0 19	before							
28	7 47	0 21	0 31							
29	8 31	0 23	0 31							
30	9 14	0 27	0 37							



6 a m Mars stationary.  
 9 a m Mercury farthest E of Sun.  
 1 p m Venus stationary.  
 1 p m Moon passes Jupiter.  
 12 a m Moon passes Venus.  
 5 p m Uranus stationary.  
 Uranus near Lambda Sagittarii.  
 9 a m Moon highest.  
 11th, 10 a m Moon passes Neptune.  
 11 a m Mercury stationary.  
 20th Sun enters Aries.  
 2 p m Sun enters Taurus (sign).  
 20th, 9 p m Moon passes Mars.  
 20th, 11 p m Moon oc'ts Gamma Librae.  
 4 p m Mercury passes Sun.  
 23d, 9 p m Moon passes Uranus.  
 23d, 11 p m Moon lowest.  
 5 a m Venus passes Sun.  
 9 a m Mercury crosses Ecliptic.  
 28th, 10 a m Moon passes Saturn.

Positions of Sun and Planets on Apr 1

Sun	Constellation
Mercury	Pisces
Venus	Aries
Mars	Ar'es
Jupiter	Libra
Saturn	Aries
Uranus	Aquarius
Neptune	Sagittarius
	Gemini

Meteor Showers

Date	Radiant	Meteors
12-24	Virgo	slow
18-23	Hydra	long
20-22*	Lyra	swift
30	Draco	slow

Morning stars Evening stars

Morning stars	Evening stars
Mercury	Mercury
(after 23d)	(until 23d)
Venus	Venus
(after 27th)	(until 27th)
Saturn	Mars
Uranus	Jupiter
	Neptune

Minima of Algol

Date	Time
April 6	9 17 p m
15	11 44 a m
24	2 11 a m

When Polaris Is North

Date	Time
Apr 1	12 49 a m
10	12 13
20	11 34
30	10 54

Moon farthest from Earth, 4th, 4 a m.  
 Moon nearest the Earth, 18th, 5 p m.

For intermediate dates add 2d 20h 49m.

For intermediate dates add 11h 58m.



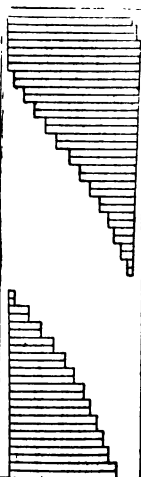
APRIL, 1915.

Eastern Standard Time—75th Meridian.

Moon Rises before or souths sets after Sun  
 For Pac Mercury Venus coast sets after sets after  
 add 6 m after after  
 Light and dark between 6 p m and 6 a m  
 Eve Morn

Planetary configurations and other phenomena

Date	a m	H M	H M	H M	6	8	10	12	2	4	6
1	9 49	1 38	3 0								
2	10 33	1 39	2 57								
3	11 15	1 40	2 52								
4	11 57	1 40	2 47								
5	p m	1 40	2 44								
6	1 23	1 39	2 38								
7	2 7	1 39	2 31								
8	2 53	1 36	2 28								
9	3 41	1 34	2 23								
10	4 31	1 30	2 17								
11	5 23	1 26	2 11								
12	6 18	1 22	2 4								
13	7 10	1 17	1 58								
14	8 4	1 13	1 52								
15	8 59	1 7	1 45								
16	9 54	1 0	1 37								
17	10 49	0 54	1 30								
18	11 45	0 46	1 23								
19	a m	0 39	1 15								
20	12 42	0 31	1 7								
21	1 40	0 22	0 59								
22	2 37	0 12	0 50								
23	3 34	Rises	0 41								
24	4 30	before	0 34								
25	5 23	0 12	0 25								
26	6 14	0 16	Rises								
27	7 2	0 19	before								
28	7 47	0 21	0 31								
29	8 31	0 23	0 31								
30	9 14	0 27	0 37								



6 a m Mars stationary.  
 9 a m Mercury farthest E of Sun.  
 1 p m Venus stationary.  
 1 p m Moon passes Jupiter.  
 12 a m Moon passes Venus.  
 5 p m Uranus stationary.  
 Uranus near Lambda Sagittarii.  
 9 a m Moon highest.  
 11th, 10 a m Moon passes Neptune.  
 11 a m Mercury stationary.  
 20th Sun enters Aries.  
 2 p m Sun enters Taurus (sign).  
 20th, 9 p m Moon passes Mars.  
 20th, 11 p m Moon oc'ts Gamma Librae.  
 4 p m Mercury passes Sun.  
 23d, 9 p m Moon passes Uranus.  
 23d, 11 p m Moon lowest.  
 5 a m Venus passes Sun.  
 9 a m Mercury crosses Ecliptic.  
 28th, 10 a m Moon passes Saturn.

Positions of Sun and Planets on Apr 1

Planet	Constellation
Sun	Pisces
Mercury	Aries
Venus	Aries
Mars	Libra
Jupiter	Aries
Saturn	Aquarius
Uranus	Sagittarius
Neptune	Gemini

Meteor Showers

Date	Radiant	Meteors
12-24	Virgo	slow
18-23	Hydra	long
20-22*	Lyra	swift
30	Draco	slow

Morning stars	Evening stars
Mercury (after 23d)	Mercury (until 23d)
Venus (after 27th)	Venus (until 27th)
Saturn	Mars
Uranus	Jupiter
	Neptune

Minima of Algol

Date	Time
April 6	9 17 p m
15	11 44 a m
24	2 11 a m

When Polaris Is North

Date	Time
Apr 1 12 49 a m	12 47 p m
10 12 13	12 11
20 11 34	11 32
30 10 51	10 52

Moon farthest from Earth, 4th, 4 a m.  
 Moon nearest the Earth, 18th, 5 p m.

For intermediate dates add 2d 20h 49m.

For intermediate dates add 11h 58m.



MAY, 1905.

Eastern Standard Time—75th Meridian.

Moon—Rises before or souths sets after Sun  
 For Pac Mercury Venus coast rises rises add 6 m before before  
 Light and dark between 6 p m and 6 a m  
 Eve Morn  
 Date a m H M H M 6 8 10 12 2 4 6

Planetary configurations and other phenomena

1	9 56	0 29	0 40
2	10 38	0 32	0 44
3	11 21	0 34	0 48
4	p m	0 35	0 50
5	12 51	0 37	0 53
6	1 39	0 41	0 56
7	2 28	0 43	0 59
8	3 19	0 44	1 1
9	4 12	0 45	1 4
10	5 5	0 47	1 7
11	5 57	0 49	1 9
12	6 50	0 50	1 12
13	7 43	0 51	1 14
14	8 36	0 53	1 17
15	9 30	0 55	1 20
16	10 25	0 56	1 22
17	11 21	0 56	1 24
18	a m	0 57	1 26
19	12 19	0 58	1 28
20	1 18	0 59	1 30
21	2 15	0 59	1 32
22	3 12	1 0	1 33
23	4 5	1 1	1 36
24	4 55	1 2	1 39
25	5 43	1 2	1 41
26	6 28	1 2	1 43
27	7 11	1 2	1 45
28	7 53	1 2	1 46
29	8 35	1 3	1 48
30	9 18	1 2	1 49
31	10 1	1 1	1 50



3d, 2 a m Moon passes Mercury.  
 7 a m Moon passes Venus.  
 1 a m Jupiter passes Sun.  
 4th, 8 a m Moon passes Jupiter.  
 12 a m Mercury stationary.  
 8th, 3 p m Mercury farthest from Sun.  
 3 p m Mars 180 Degrees from Sun.  
 8th, 4 p m Moon highest.  
 8th, 5 p m Moon passes Neptune.  
 4 a m Mars crosses Ecliptic.

Sun enters Taurus.

2 a m Moon occults Eta Virginis.  
 11 a m Venus stationary.  
 5 p m Moon passes Mars.

Mars near Alpha Librae.

21st, 5 a m Moon passes Uranus.  
 9 a m Mercury farthest W of Sun.  
 21st, 11 a m Moon lowest.  
 21st, 2 p m Sun enters Gemini (sign).  
 5 a m Jupiter 90 Degrees from Sun.  
 8 p m Moon passes Jupiter.

12 a m Mercury farthest S of Sun.  
 2 a m Moon passes Venus.

Positions of Sun and Planets on May 1

Planet	Constellation
Sun	Aries
Mercury	Aries
Venus	Aries
Mars	Libra
Jupiter	Aries
Saturn	Aquarius
Uranus	Sagittarius
Neptune	Gemini

Meteor Showers

Date	Radiant	Meteors
1-6*	Aquarius	streaks
11-18	Corona	small
30-Aug	Pegasus	swift
May-July	Ophiuchus	v slow

Morning stars	Evening stars
Mercury	Mars
Venus	Jupiter
Jupiter	(until 4th)
(after 4th)	Uranus
Saturn	Neptune

Minima of Algol  
 Algol too near Sun for observation during May.

When Polaris Is North

Date	Time
May 1 10 48 a m	10 46 p m
10 10 13	10 11
20 9 33	9 31
30 8 54	8 52

Moon farthest from Earth, 1st, 10 a m.  
 Moon nearest the Earth, 16th, midnight.  
 Moon farthest from Earth, 29th, 1 a m.

For intermediate dates add 11h 58m.





## MAY.

**NORTH**—Another busy month, even if the work has been well kept up during the spring. Use the hoe and cultivator vigorously to keep down weeds and conserve moisture. If not done before, most of the smaller fruits may yet be planted the first of the month. If caterpillars, slugs or worms make their appearance on the young shoots of vines or trees, a free application of tobacco dust mixed with pyrethrum powder should be used. It would be well to use these as preventives, for these pests are hard to exterminate when they get a foothold. Fires in the greenhouses may now be dispensed with. Put on a thicker covering of whitewash over the glass. Ventilate carefully. Mow the lawns, trim up the edgings and hoe and rake the flower beds. If weeds are not kept down as they first appear, three times the labor will be required to eradicate them next month. Cuttings or young plants of chrysanthemums, if started now, will give plants for fall flowering. Spray and graft fruit trees, if not done before. Thin out all the vegetables sown last month, which are large enough, and hoe deeply all planted crops, such as cabbage, cauliflower, lettuce, etc. Sow brussels sprouts, peas, spinach, lettuce, radish, onions, beets, cabbage, beans and corn for a succession of crops. Put out pole beans, including lima, also squashes, melon, celery and cucumbers. Do not let the cultivator get rusty; keep it going in all such crops as are large enough. Strawberry planting should be done as early as possible. Better in April than in May. Tomato, pepper and eggplants are usually sown the middle of the month. Rhubarb and asparagus should be ready for market; also lettuce or radishes which were put in cold frames in March. Additional labor will probably be required, marketing of crops occupies a large portion of time, while thinning out of sown crops and keeping down weeds entail an amount of labor not before necessary. To withhold labor at this critical time is shortsighted economy, as the amateur gardener will find. Before turning cattle into pasture, see that fences and walls are in proper shape. If not done before, make a raid on the vermin in the poultry house.

**SOUTH**—Fight the weeds. Corn planted last month should now be ready to be cultivated. More corn may be planted if desired for a late crop or for silage. Thoroughly prepare land and set out tobacco plants. In the cotton regions, hoe cotton and chop to a stand. Farmers who believe in applying fertilizers at the time of first cultivation of corn should now put their theory in practice. Sow winter cabbage, more lettuce and radishes, also melons, squashes, cucumbers, etc. Sow seeds for late crops of peppers and tomatoes. Sweet potatoes may be set out. Plant late varieties of corn for succession. "A dry May makes a good crop year," old farmers say. However, if too dry, irrigate or secure water supply in any way possible. Plenty of pole beans should be supplied at this time.

In writing to the advertiser say: "I saw your adv in one of the old reliable American Agriculturist weeklies."

6th Month.

JUNE.

1905.

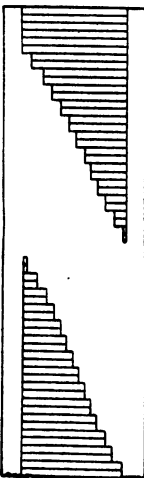
Moon's Phases.				Eastern Time.			Central Time.			Mountain Time.			
				D.	H.	M.	D.	H.	M.	D.	H.	M.	
New Moon.....				8	0	57 Morn.	2	11	57 Even.	2	10	57 Even.	
First Quarter.....				10	8	5 Morn.	10	7	5 Morn.	10	6	5 Morn.	
Full Moon.....				17	0	51 Morn.	16	11	51 Even.	16	10	51 Even.	
Last Quarter.....				24	2	46 Even.	24	1	46 Even.	24	0	46 Even.	
Day of Mo.	Day of Wk.	Light and Dark Moon	Moon's Place.	Calendar—N. States.			Calendar—S. States.			Weather Forecasts.			
				Lat. 42° +							Lat. 33° +		
				Sun Rises	Sun Sets	Moon Rises	Sun Rises	Sun Sets	Moon Rises				
H. M.	H. M.	H. M.	H. M.	H. M.	H. M.								
1	Th.	☾	♊	4 26	7 31	3 41	4 53	7 2	3 57	Unsettled period. Stormy over Middle Atlan. States and N. England. Cool spell. Local frosts and freezing weather over Rocky mountain portion of the Northwest. Warm wave. Hot, sultry weather in Cen., Sout'n and Eastern States. Drouth in Alabama and Ga. Rain period. Excessive rainfall in Kansas, Missouri, Iowa, Illinois and Wisconsin. Hall storms. Destructive hail and flood in upper Missouri and Mississippi Valleys. Tornado in Iowa, Minnesota and Wisconsin. Unsettled period. General rains at all points east of the Mississippi river. Hot wave. Fine growing season in Central and Mid. At. States.			
2	Fri.	☾	♋	4 25	7 32	4 16	4 53	7 3	4 36				
3	Sat.	☉	♋	4 25	7 32	sets.	4 53	7 3	sets.				
4	Sun.	☉	♌	4 24	7 33	8 50	4 53	7 4	8 25				
5	Mo.	☉	♌	4 24	7 34	9 41	4 52	7 4	9 17				
6	Tu.	☉	♌	4 24	7 34	10 27	4 52	7 5	10 5				
7	We.	☉	♍	4 23	7 35	11 8	4 52	7 6	10 50				
8	Th.	☉	♍	4 23	7 35	11 46	4 51	7 6	11 32				
9	Fri.	☉	♍	4 23	7 36	morn	4 51	7 7	morn				
10	Sat.	☾	♎	4 22	7 36	0 20	4 51	7 7	0 12				
11	Sun.	☾	♎	4 22	7 37	0 51	4 51	7 7	0 48				
12	Mo.	☾	♎	4 22	7 37	1 24	4 51	7 7	1 28				
13	Tu.	☾	♏	4 22	7 37	1 59	4 51	7 8	2 8				
14	We.	☾	♏	4 22	7 38	2 34	4 51	7 8	2 48				
15	Th.	☾	♏	4 22	7 38	2 13	4 51	7 9	3 32				
16	Fri.	☾	♏	4 22	7 39	3 59	4 51	7 9	4 21				
17	Sat.	☾	♏	4 22	7 39	rises.	4 51	7 9	rises.				
18	Sun.	☾	♏	4 23	7 39	9 1	4 51	7 10	8 36				
19	Mo.	☾	♏	4 23	7 40	9 45	4 51	7 10	9 24				
20	Tu.	☾	♏	4 23	7 40	10 24	4 52	7 10	11 05				
21	We.	☾	♏	4 23	7 40	10 57	4 52	7 11	10 42				
22	Th.	☾	♏	4 23	7 40	11 27	4 52	7 11	11 16				
23	Fri.	☾	♏	4 24	7 40	11 53	4 53	7 11	11 47				
24	Sat.	☾	♏	4 24	7 40	morn	4 53	7 11	morn				
25	Sun.	☾	♏	4 24	7 40	0 19	4 53	7 12	0 19				
26	Mo.	☾	♏	4 25	7 40	0 46	4 54	7 12	0 51				
27	Tu.	☾	♏	4 25	7 40	1 12	4 54	7 12	1 22				
28	We.	☾	♏	4 25	7 40	1 43	4 54	7 12	1 56				
29	Th.	☾	♏	4 26	7 40	2 15	4 55	7 12	2 33				
30	Fri.	☾	♏	4 26	7 40	2 52	4 55	7 12	3 14				

JUNE, 1905.

Eastern Standard Time—75th Meridian.

Moon Rises before or souths sets after Sun Light and dark  
 For Pac Mercury Venus between 6 p m  
 coast rises rises and 6 a m  
 add 6 m before before Eve Morn

Date a m	H M	H M	6	8	10	12	2	4	6
1	10 47	1 1	1	53					
2	11 34	1 1	1	55					
3	p m	1 1	1	57					
4	1 15	1 0	1	53					
5	2 8	0 59	2	0					
6	3 2	0 58	2	1					
7	3 55	0 57	2	3					
8	4 47	0 56	2	5					
9	5 39	0 54	2	7					
10	6 31	0 52	2	6					
11	7 22	0 50	2	10					
12	8 15	0 48	2	12					
13	9 9	0 46	2	13					
14	10 5	0 44	2	15					
15	11 2	0 41	2	17					
16	a m	0 37	2	18					
17	12 0	0 34	2	20					
18	12 57	0 30	2	22					
19	1 52	0 26	2	24					
20	2 45	0 22	2	25					
21	3 35	0 17	2	26					
22	4 22	0 14	2	28					
23	5 6	0 8	2	29					
24	5 49	Sets	2	30					
25	6 32	after	2	32					
26	7 14	0 19	2	34					
27	7 57	0 21	2	36					
28	8 41	0 28	2	38					
29	9 28	0 33	2	39					
30	10 17	0 38	2	41					



Planetary configurations and other phenomena

4 a m Moon passes Jupiter.  
 6 a m Mercury passes Jupiter.  
 2d, 7 a m Venus brightest.  
 11 p m Moon highest.  
 12 a m Moon passes Neptune.  
 Mercury in Taurus.

Jupiter enters Taurus.

4 p m Moon passes Mars.  
 6 a m Jupiter stationary.

17th, 12 a m Mercury crosses Ecliptic.  
 1 p m Moon passes Neptune.  
 17th, 7 p m Mars stationary.  
 17th, 3 p m Moon lowest.  
 Sun enters Gemini.  
 2 p m Mercury nearest Sun.  
 5 a m Moon passes Saturn.  
 Sun in Pisces (sign).  
 4 a m Mercury passes Sun.

5 p m Mercury passes Neptune.

3 p m Moon passes Venus.  
 12 a m Moon passes Jupiter.  
 4 a m Neptune near Sun.

Positions of Sun and Planets on June 1

Planet	Constellation
Sun	Taurus
Mercury	Taurus
Venus	Aries
Mars	Libra
Jupiter	Aries
Saturn	Aquarius
Uranus	Sagittarius
Neptune	Gemini

Date	Radiant	Meteors
10	Ophiuchus v.	swift
11-19	Draco	swift
26	Andromeda	streaks
Jun-Aug	Vulpecula	swift

Morning stars	Evening stars
Mercury (until 24th)	Mercury (after 24th)
Venus	Mars
Jupiter	Saturn
	Uranus
	Neptune

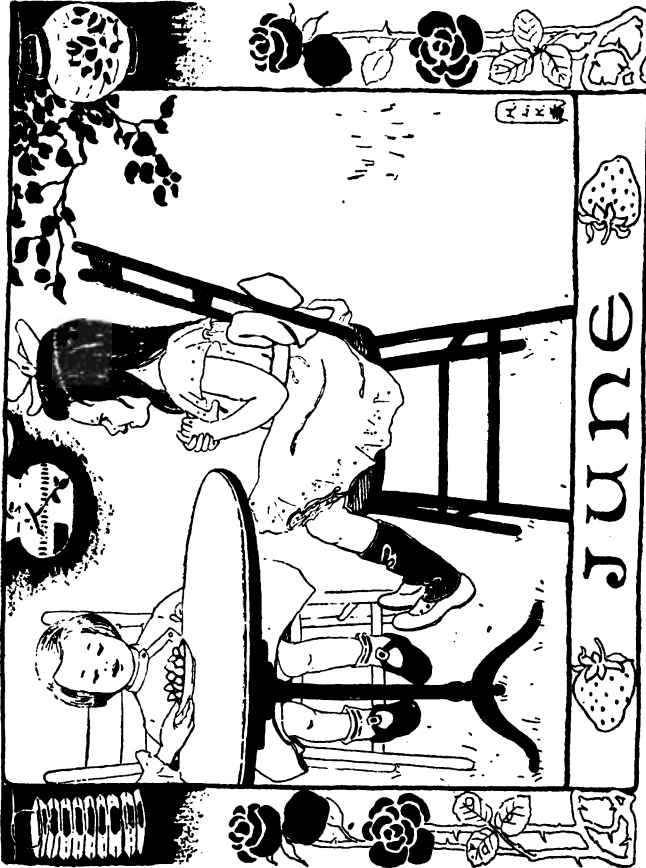
Minima of Algal	
Date	Time
June 29	12 58 a m

When Polaris Is North	
Date	Time
June 18	46 a m
	8 44 p m
	8 9
	8 9
	20 7 31
	7 29
	30 6 52
	6 50

Moon nearest the Earth, 13th, 8 p m.  
 Moon farthest from Earth, 25th, 7 p m.

Algal too near Sun for observation during June.

For intermediate dates add 1h 58m.



## JUNE.

**NORTH**—So far all has been outlay but now market gardeners begin to reap their reward. If plants get an early start and weather has been favorable, asparagus, beets, cauliflower, cabbage, lettuce, onions, peas, radishes, rhubarb, spinach and turnips are ready to sell off, and the ground plowed for the second crop, except in the cases of asparagus and rhubarb. Succession crops of beets, bush beans, cabbages, cucumbers, lettuce, peas, radishes and potatoes may still be profitably planted for the home garden. While the crops are being gathered, weeds are apt to steal a march and destroy the hard work of former months. A man can hoe and rake over several times as much ground when the weeds are young as he can after they are 6 inches high. "A stitch in time saves nine" in a case of fighting weeds in a garden. If strawberries have not been mulched with hay or straw in winter, the cuttings from the lawn are a convenient thing to place between the rows to keep the fruit from getting sanded by dashing rains. Small fruits such as gooseberries, raspberries, etc., are much improved by having a mulch placed around the roots this month. Sweet corn must be planted every ten days to keep up a succession, beginning with the earliest varieties, such as Corey and Minnesota. Thin beets and transplant field celery, cabbage, leeks and broccoll. Late plantings of fodder corn will often mature a good crop on rich land. Watch out for all kinds of insects. The farmer must fight for all he gets. Do to the insects what they would do to the plants, and do it first. Haying usually begins in June. Cut the clover before the blossoms dry. Better have a few extra parts of machines on hand to replace breakage. Don't neglect the stock and chickens. They will repay care now as well as in February. Watch the bees and have hives ready for new swarms.

**SOUTH**—Keep the cultivator going in the corn field. Give the corn an excellent start and the battle is half won. Finish planting tobacco. Plant chufas and cowpeas. Harvest oats and wheat and do not wait for all of the heads to ripen. If you do, you will lose much by shelling. Cowpeas are fine sown with corn. They improve the land, add to the crop produced, and offer little injury to the corn. Land not in use, or which is not to be soon, should be planted with peas, if possible, even if no other use is to be made of them than to keep the land occupied. Many now plant sweet potatoes. Early Irish potatoes should be dug and those wanted for late planting should be spread out in partial light to "green." Growing crops will require much attention this month. Thorough cultivation will serve the double purpose of killing weeds and conserving moisture. Plant beans, melons, tomatoes, squashes, etc. Transplant cabbage and cauliflower.

No advertisement is allowed in the columns of the American Agriculturist weeklies unless we believe that any subscriber can safely do business with the advertiser.

7th Month.

JULY.

1905.

Moon's Phases.	Eastern Time.			Central Time.			Mountain Time.		
	D.	H.	M.	D.	H.	M.	D.	H.	M.
New Moon .....	2	0	50 Even.	2	11	50 Morn.	2	10	50 Morn.
First Quarter.....	9	0	46 Even.	9	11	46 Morn.	9	10	46 Morn.
Full Moon.....	16	10	32 Morn.	16	9	32 Morn.	16	8	32 Morn.
Last Quarter.....	24	8	9 Morn.	24	7	9 Morn.	24	6	9 Morn.
New Moon.....	31	11	3 Even.	31	10	3 Even.	31	9	3 Even.

Day of Mo.	Day of Wk.	Light and Dark Moon	Moon's Place.	Calendar—N. States. Lat. 42° +			Calendar—S. States. Lat. 33° +			Weather Forecasts.
				Sun Rises	Sun Sets.	Moon Rises.	Sun Rises	Sun Sets.	Moon Rises.	
				H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	
1	Sat.	☾	♋	4 27	7 40	3 35	4 55	7 12	3 59	Hot wave. High temp. over Cen., Mid. Atl. & New Eng. Sts. Pros'n man and beast.
2	Sun.	☉	♋	4 27	7 40	sets.	4 56	7 11	sets.	
3	Mo.	☉	♋	4 28	7 40	8 24	4 56	7 11	8 1	Thunder storms.—Heavy storm energy in Cen. and So. States. Dam. from light'g and hail at many pts.
4	Tu.	☉	♋	4 28	7 40	9 9	4 57	7 11	8 48	
5	We.	☉	♋	4 29	7 39	9 49	4 58	7 10	9 33	Cool period. Abrupt fall in temp. Cool nights and mornings over Northern & Central sections.
6	Th.	☉	♋	4 29	7 39	10 24	4 58	7 10	10 13	
7	Fri.	☉	♋	4 30	7 39	10 55	4 59	7 10	10 51	Warm wave. Prostrating heat over all Western, Central and Eastern sections.
8	Sat.	☉	♋	4 31	7 38	11 31	4 59	7 9	11 31	
9	Sun.	☾	♋	4 32	7 38	morn	5 0	7 9	morn	Thunder storms.—Storms fr. Rocky Mountains to At. ocean. Tor. in Ia., Mo. and Ill.
10	Mo.	☾	♋	4 32	7 37	0 3	5 0	7 9	0 10	
11	Tu.	☾	♋	4 33	7 37	0 36	5 1	7 9	0 48	Cool period. Foggy and cloudy over East Gulf & So. At. Sts. Cool and dry in N. W.
12	We.	☾	♋	4 34	7 36	1 12	5 1	7 8	1 29	
13	Th.	☾	♋	4 35	7 36	1 53	5 2	7 8	2 14	Unsettled. Cloudy in S. W. and Miss. Valley. Dry in N. W. sections.
14	Fri.	☾	♋	4 35	7 35	2 40	5 2	7 8	3 4	
15	Sat.	☾	♋	4 36	7 34	3 33	5 3	7 7	3 56	Hail storms. Local showers in Mo.
16	Sun.	☾	♋	4 37	7 34	rises.	5 3	7 7	rises.	
17	Mo.	☾	♋	4 38	7 33	8 21	5 4	7 7	8 0	Cool period. Foggy and cloudy over East Gulf & So. At. Sts. Cool and dry in N. W.
18	Tu.	☾	♋	4 39	7 32	8 56	5 4	7 7	8 39	
19	We.	☾	♋	4 40	7 32	9 27	5 5	7 6	9 15	Unsettled. Cloudy in S. W. and Miss. Valley. Dry in N. W. sections.
20	Th.	☾	♋	4 41	7 31	9 55	5 5	7 6	9 47	
21	Fri.	☾	♋	4 42	7 30	10 20	5 6	7 6	10 18	Hail storms. Local showers in Mo.
22	Sat.	☾	♋	4 43	7 29	10 47	5 7	7 5	10 52	
23	Sun.	☾	♋	4 44	7 28	11 14	5 7	7 5	11 23	Cool period. Foggy and cloudy over East Gulf & So. At. Sts. Cool and dry in N. W.
24	Mo.	☾	♋	4 44	7 28	11 42	5 8	7 4	11 54	
25	Tu.	☾	♋	4 45	7 27	morn	5 9	7 3	morn	Unsettled. Cloudy in S. W. and Miss. Valley. Dry in N. W. sections.
26	We.	☾	♋	4 46	7 26	0 13	5 9	7 3	0 30	
27	Th.	☾	♋	4 47	7 25	0 48	5 10	7 2	1 8	Hail storms. Local showers in Mo.
28	Fri.	☾	♋	4 48	7 23	1 29	5 11	7 1	1 52	
29	Sat.	☾	♋	4 49	7 22	2 15	5 11	7 0	2 40	Cool period. Foggy and cloudy over East Gulf & So. At. Sts. Cool and dry in N. W.
30	Sun.	☾	♋	4 50	7 21	3 8	5 12	7 0	3 33	
31	Mo.	☾	♋	4 50	7 20	4 10	5 13	6 59	4 33	

JULY, 1935.

Eastern Standard Time—75th Meridian.

Moon rises before or  
souths sets after Sun Light and dark  
between 6 p m  
For Pac Mercury Venus and 6 a m  
add 6 m coast sets rises before  
Eve Morn

Planetary  
configurations  
and other  
phenomena

Date	a m	H	M	H	M	6	8	10	12	2	4	6
1	11	8	0	42	2	43						
2	p	m	0	46	2	46						
3	12	55	0	50	2	46						
4	1	50	0	53	2	47						
5	2	43	0	57	2	48						
6	3	36	1	0	2	50						
7	4	28	1	2	2	52						
8	5	20	1	4	2	53						
9	6	11	1	5	2	54						
10	7	3	1	8	2	55						
11	7	57	1	10	2	56						
12	8	52	1	11	2	58						
13	9	48	1	13	2	59						
14	10	44	1	14	3	0						
15	11	40	1	16	3	2						
16	a	m	1	17	3	4						
17	12	34	1	17	3	4						
18	1	25	1	18	3	5						
19	2	14	1	18	3	5						
20	3	0	1	18	3	7						
21	3	44	1	18	3	8						
22	4	27	1	18	3	9						
23	5	9	1	18	3	10						
24	5	52	1	17	3	11						
25	6	35	1	16	3	11						
26	7	20	1	16	3	13						
27	8	7	1	16	3	14						
28	8	57	1	15	3	15						
29	9	50	1	14	3	15						
30	10	44	1	13	3	16						
31	11	39	1	11	3	16						

9 p m Mercury farthest N. of Sun.  
9 a m Moon highest—passes Neptune.  
4th, 11 a m Venus passes Jupiter.  
Mercury enters Cancer.  
8 a m Venus farthest W of Sun.  
3 a m Moon passes Mars.  
8 a m Moon passes Neptune.  
6 a m Moon lowest.  
Mercury enters Leo.  
6 p m Venus farthest S of Sun.  
Sun enters Cancer.  
11 a m Moon passes Jupiter.  
9 a m Sun enters Cancer (sign).  
8 a m Mercury crosses Ecliptic.  
6 p m Moon passes Jupiter.  
1 a m Moon occults Gamma Tauri.  
9 a m Moon passes Venus.  
5 p m Moon highest.  
29th, 8 p m Moon passes Neptune.

Positions of Sun and  
Planets on July 1

Planet	Constellation
Sun	Gemini
Mercury	Gemini
Venus	Taurus
Mars	Libra
Jupiter	Taurus
Saturn	Aquarius
Uranus	Sagittarius
Neptune	Gemini

Moon nearest the  
Earth, 9th, midnight.  
Moon, farthest from  
Earth, 23d 1 p m.

Meteor Showers

Date	Radiant	Meteors
6-22	Sagittarius	v slow
28*	Aquarius	slow
July-Aug	Piscis Aust	long
July-Sept	Cepheus	swift

Minima of Algal

Date	Time
July 7	3 24 p m
16	5 51 a m
24	8 18 p m

For intermediate dates  
add 2d 20h 49m.

Morning

stars  
Venus  
Jupiter  
Neptune

Evening

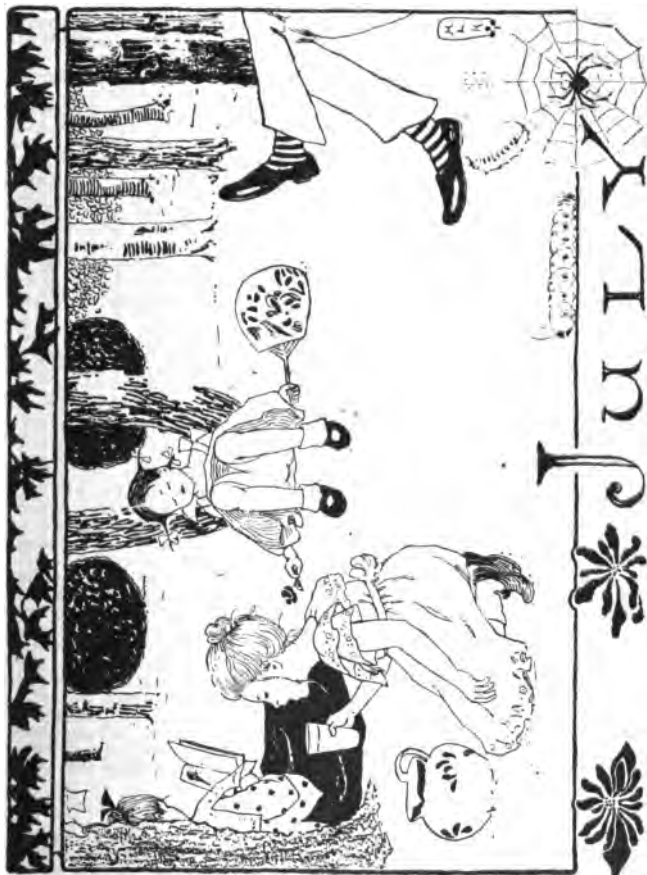
stars  
Mercury  
Mars  
Saturn  
Uranus

When Polaris is North

Date	Time
July 1	6 48 a m
6	6 12
12	5 33
18	4 54
24	4 52

For intermediate dates  
add 11h 58m.





## JULY.

**NORTH**—In the greenhouse, water and ventilate carefully; also fumigate with tobacco or something equally good. The atmosphere should be kept moist. Dahlias, roses, gladioli and herbaceous perennial and annual plants should be staked. Do not tie too tightly. Early vegetables may be marketed. This is the time to thin apples, pears, peaches, etc. If the fruit sets very full, it will be found advisable to thin out at least one-half or two-thirds, and the remaining will make up in weight and quality. Cabbages, cauliflower and celery, if wanted for fall or winter use, should be planted this month. Sweet corn, beans, cucumbers and lettuce may yet be sown for late crops; also rutabaga turnips. Transplant late celery. Finish the haying and go through the corn a couple of times before harvest. Early cut hay is best, and lowland or swamp hay can usually be obtained to good advantage early this month. Grass land may be plowed and sown to rutabaga. The poultryman will give his fowls a wide range. If they will leave the crops alone, they are an excellent insecticide.

**SOUTH**—There is a lull in farm operations at this time, though there is plenty which may profitably be done. Harvest and thresh oats and wheat, if not done last month. Cultivation of cotton is generally completed during this month. Sweet potatoes may still be planted with good results, and from now on the "vines" instead of "draws" are used. Those which have already been planted should be hoed or moved to prevent the vines from rooting at the joints. Extra time in preparing the seed bed will not be thrown away, as thoroughly cultivated ground holds moisture better and produces more ideal conditions for the potatoes. Ordinarily this month is dry and much attention should be given stock in the way of supplying plenty of fresh water. Pastures are very apt to go short also, and attention is needed in this respect. An early sown plot of corn or peas and oats would come acceptable now to tide the stock over a dry spell. Cowpeas which were sown for early hay should now be cut, which will give them ample time to make a second crop for October cutting. This is an excellent time to prepare buildings, sheds, etc., for winter, and to get out material for new buildings which are to be put up during the winter. The season is usually dry for planting garden vegetables successfully, though carrots, parsnips, endive, turnips, Irish potatoes and pickling cucumbers may be sown if desired. It would be well to put out a crop of rutabaga for the stock. Transplant cabbage, cauliflower, leeks, broccoli and early crop celery. The dry condition of the ground makes it imperative that the very best of seed be obtained.

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We guarantee the reliability of every advertisement in the American Agriculturist weeklies, and will make good any loss which any subscriber may sustain, while his subscription lasts, by trusting any advertiser who may prove to be a deliberate swindler.

8th Month.

AUGUST.

1905.

Moon's Phases.	Eastern Time.			Central Time.			Mountain Time.		
	D.	H.	M.	D.	H.	M.	D.	H.	M.
First Quarter .....	7	5	16 Even.	7	4	16 Even.	7	3	16 Even.
Full Moon .....	14	10	31 Even.	14	9	31 Even.	14	8	31 Even.
Last Quarter .....	23	1	10 Morn.	23	0	10 Morn.	22	11	10 Even.
New Moon .....	30	8	13 Morn.	30	7	13 Morn.	30	6	13 Morn.

Day of Mo.	Day of Wk.	Light and Dark Moon	Moon's Place.	Calendar—N. States.			Calendar—S. States.			Weather Forecasts.
				Lat. 42° +			Lat. 33° +			
				Sun Rises	Sun Sets	Moon Sets.	Sun Rises	Sun Sets	Moon Sets.	
H. M.	H. M.	H. M.	H. M.	H. M.	H. M.					
1 Tu.	●	☾	♏	4 52	7 19	sets.	5 14	6 58	sets.	Storm Wave. Great electric activity in eastern and south'n sections.
2 We.	●	☾	♏	4 53	7 18	8 24	5 14	6 57	8 11	
3 Th.	●	☾	♏	4 54	7 17	8 57	5 15	6 56	8 50	Cool period. Generally backward weather North-west and Central sections.
4 Fri.	●	☾	♏	4 55	7 16	9 29	5 16	6 55	9 29	
5 Sat.	●	☾	♏	4 57	7 14	10 7	5 16	6 54	10 11	Warm Wave. Sultry weather East and South. Cool nights and hot days over North-west and Lakes.
6 Sun.	●	☾	♏	4 58	7 13	10 39	5 17	6 54	10 50	
7 Mo.	☾	☾	♏	4 59	7 11	11 15	5 18	6 53	11 30	Storm Period. Unprecedented rain in Ala., Ga., the Carolinas and W. Virginia.
8 Tu.	☾	☾	♏	5 0	7 10	11 53	5 18	6 52	morn	
9 We.	☾	☾	♏	5 1	7 9	morn	5 19	6 51	0 13	Unsettled Period. Damp, cloudy & foggy conditions in Lake region, Mid. At. States, and New Engl'd.
10 Th.	☾	☾	♏	5 2	7 8	0 38	5 20	6 50	1 1	
11 Fri.	☾	☾	♏	5 3	7 6	1 27	5 21	6 49	1 52	Warm Wave. Great heat W. and N. W. Generally dry fr. Texas to Dak'tas. Tem. 98 Ft. W'th, 95 at Kan. City
12 Sat.	☾	☾	♏	5 4	7 5	2 22	5 21	6 48	2 46	
13 Sun.	☾	☾	♏	5 5	7 3	3 20	5 22	6 46	3 43	Great Storm Wave. Tropical hurricane over southern and eastern sections with loss of life & prop'ty.
14 Mo.	☾	☾	♏	5 6	7 2	rises.	5 23	6 45	rises.	
15 Tu.	☾	☾	♏	5 6	7 0	7 23	5 23	6 44	7 13	
16 We.	☾	☾	♏	5 8	6 59	7 57	5 24	6 43	7 46	
17 Th.	☾	☾	♏	5 9	6 58	8 23	5 25	6 42	8 18	
18 Fri.	☾	☾	♏	5 10	6 56	8 52	5 25	6 41	8 52	
19 Sat.	☾	☾	♏	5 12	6 54	9 17	5 26	6 39	9 23	
20 Sun.	☾	☾	♏	5 13	6 53	9 44	5 26	6 38	9 53	
21 Mo.	☾	☾	♏	5 14	6 51	10 13	5 27	6 37	10 27	
22 Tu.	☾	☾	♏	5 15	6 50	10 46	5 28	6 36	11 04	
23 We.	☾	☾	♏	5 16	6 48	11 23	5 28	6 35	11 45	
24 Th.	☾	☾	♏	5 17	6 47	morn	5 29	6 34	morn	
25 Fri.	☾	☾	♏	5 18	6 45	0 5	5 30	6 32	0 29	
26 Sat.	☾	☾	♏	5 19	6 43	0 55	5 30	6 31	1 20	
27 Sun.	☾	☾	♏	5 20	6 42	1 52	5 31	6 30	2 15	
28 Mo.	☾	☾	♏	5 21	6 40	2 54	5 32	6 29	3 16	
29 Tu.	☾	☾	♏	5 22	6 39	4 3	5 32	6 28	4 21	
30 We.	☾	☾	♏	5 23	6 37	sets.	5 33	6 26	sets.	
31 Th.	☾	☾	♏	5 24	6 35	7 29	5 34	6 25	7 25	

AUGUST, 1905.

Eastern Standard Time—75th Meridian.

Moon Rises before or  
souths sets after Sun Light and dark  
between 6 p m  
For Pac Mercury Venus and 6 a m  
coast sets rises before Eve Morn  
add 6 m after before

Date	p m	H M	H M	6	8	10	12	2	4	6
1	12 34	1 10	3 16							
2	1 29	1 9	3 17							
3	2 23	1 7	3 18							
4	3 16	1 5	3 18							
5	4 8	1 3	3 19							
6	5 1	1 2	3 20							
7	5 54	1 0	3 20							
8	6 48	0 57	3 20							
9	7 42	0 55	3 19							
10	8 37	0 52	3 19							
11	9 32	0 51	3 20							
12	10 26	0 49	3 21							
13	11 18	0 45	3 21							
14	a m	0 41	3 20							
15	12 7	0 39	3 20							
16	12 54	0 36	3 20							
17	1 39	0 32	3 20							
18	2 22	0 28	3 19							
19	3 5	0 24	3 19							
20	3 47	0 20	3 19							
21	4 30	0 17	3 19							
22	5 14	0 13	3 19							
23	5 59	0 11	3 18							
24	6 47	0 5	3 17							
25	7 38	0 0	3 17							
26	8 30		3 17							
27	9 24	Rises	3 16							
28	10 20	before	3 15							
29	11 15		3 14							
30	p m	0 0	3 14							
31	1 5	0 8	3 13							

Planetary  
configurations  
and other  
phenomena

Mars near Iota Librae.

8 a m Mercury farthest E of Sun.

2d, 11 p m Moon passes Mercury.

1 p m Mercury farthest from Sun.

Venus enters Gemini.

4 a m Moon passes Mars.

Sun enters Leo.

1 a m Moon passes Uranus.

11th, 1 p m Moon lowest.

14th, Moon partially eclipsed.

5 p m Mercury passes Neptune.

10 a m Mercury stationary.

15th, 4 p m Moon passes Saturn.

Mars enters Scorpio.

Mars near Delta Scorpil.

10 a m Moon passes Jupiter.

23d, 4 p m Sun enters Virgo (sign).

26th, 2 a m Moon highest.

7 a m Moon passes Neptune.

8 a m Moon passes Venus.

Venus enters Cancer.

Sun totally eclipsed (visible in

U S as partial).

30th, 4 a m Moon passes Mercury.

Positions of Sun and  
Planets on Aug 1

Planet	Constellation
Sun	Cancer
Mercury	Leo
Venus	Taurus
Mars	Libra
Jupiter	Taurus
Saturn	Aquarius
Uranus	Sagittarius
Neptune	Gemini

Moon nearest the  
Earth, 4th, 3 p m.  
Moon farthest from  
Earth, 20th, 8 a m.

Meteor Showers

Date	Radiant	Meteors
10-12*	Persues	swift
15	Cygnus	swift
21-25	Draco	bright
Aug-Oct	Auriga	streaks

Minima of Algol

Date	Time
Aug 2	10 45 a m
11	1 12 a m
19	3 38 p m
28	6 5 a m

For intermediate dates  
add 2d 20h 49m.

Morning  
stars

Star	Time
Mercury	(after 29th)
Venus	(until 29th)
Neptune	Mars
	Jupiter
	Saturn
	Uranus

When Polaris is North

Date	Time
Aug 1	4 46 a m
10	4 11
20	3 32
30	2 53
	4 9
	3 30
	2 51

For intermediate dates  
add 11h 58m.



## AUGUST.

**NORTH**—Watering, ventilating and fumigating the greenhouse should be given the same attention as last month. If not already done, carnations and other plants should be cut back, if desired to produce flowers in winter. Chrysanthemums may be made bushy by topping. Cut off the strawberry runners close to the parent plant so the full force of roots may go into the crowns for the next season's growth. Old stems of raspberries, blackberries, etc., which have borne their fruit, may be cut away. Thin out the young shoots to three or four canes to each hill. Give cabbage, cauliflower and celery deep cultivation. In many sections onions are ready for harvesting. When the tops become yellow and drop down, harvest at once. They may be dried by putting in a shed in rather thin layers. Bush beans and peas may still be sown for late crops. Spinach for fall marketing may be sown. Begin to earth up celery and set more; also plant endive. Pick, ripen and market early pears, also other early fruit. New shoots of blackberries may be pinched back. The market gardener will generally be busy marketing vegetables and stirring up the soil. The weeder may still be used to a good advantage. Continue spraying operations. Upon the average farm this is one of the easiest of the warm months, and it will be well to plan a little vacation trip.

**SOUTH**—Plant late varieties of peas and gather the first cowpeas. Fodder may be pulled and cotton picking generally begins this month. Attention should be given the tobacco crop. In southern sections plant Irish potatoes early for fall crop. Sweet potatoes may still be planted early in the month, and under favorable conditions will do fairly well. Harvest the fodder crop and carefully put away for winter use. Do not delay these general farm operations, for cotton picking comes in the last of the month, and everything gives place to it. The stock may be short of feed and water. Watch out for it. Sow plenty of turnips, especially winter varieties. Chickens will thrive on these, if given access to them. If there is sufficient moisture in the ground, sow cabbage for latest crop. Successional crops of cauliflower, collards, carrots, squashes, cabbages, radishes and beets may be sown. Onion sets are planted now.

## TO SHOOT ON THE WING.

Aim just forward of the head of the game at a short range, and its own length ahead at a fairly long range, and jerk the muzzle in time with the flight of the object, then fire without stopping the correct sideways movement of the gun and without dwelling a moment on the aim. Pull the trigger with the finger, adding no wrist movement. Keep the eyes open when firing. Study causes of failures and watch older sportsmen.

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In writing to the advertiser say: "I saw your adv in one of the old reliable American Agriculturist weeklies."

# 9th Month.      SEPTEMBER.      1905.

Moon's Phases.	Eastern Time.			Central Time.			Mountain Time.		
	D.	H.	M.	D.	H.	M.	D.	H.	M.
First Quarter.....	5	11	9 Even	5	10	9 Even.	5	9	9 Even.
Full Moon.....	13	1	10 Even.	13	0	10 Even.	13	11	10 Morn.
Last Quarter.....	21	6	13 Even.	21	4	13 Even.	21	3	13 Even.
New Moon.....	28	4	59 Even.	28	3	59 Even.	28	2	59 Even.

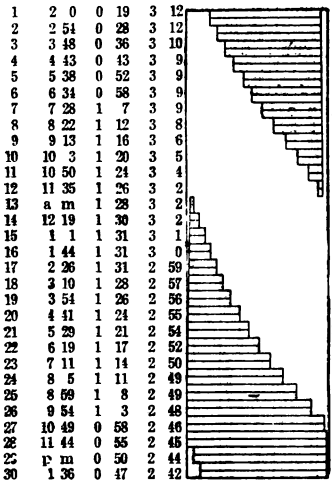
Day of Mo.	Day of Wk.	Light and Dark Moon	Moon's Place.	Calendar—N. States.			Calendar—S. States.			Weather Forecasts.
				Lat. 42° +			Lat. 35° +			
				Sun Rises	Sun Sets.	Moon Sets.	Sun Rises	Sun Sets.	Moon Sets.	
1	Fri.	●	♌	5 25	6 33	8 2	5 35	6 24	8 6	<p>Warm Wave. Abnormally high temp. for Sept'r south of Ohio &amp; west Miss. river.</p> <p>Unsettled. Blustery and fall-like over N. W. Over Lake reg. &amp; No. At. co'st stormy.</p> <p>Tropical Storm. Destructive rain and wind along entire Atlantic coastal plain.</p> <p>Cool Wave. Sharp frosts in sections north of 40th par. Freezing in Mon. and N. Dakota.</p> <p>Warm Per'd. Very warm days for Sept'r in Central, Eastern &amp; Southern States.</p> <p>Windy Period. Heavy wind str. in S. W. &amp; lower Missis. Valley.</p> <p>Cool Wave. Killing frosts many points S. and W. Winds from N.W. ext. S. to Tenn.</p> <p>Unsettled. Blustery along all coast lines and over Great Lakes.</p>
2	Sat.	●	♌	5 26	6 32	8 39	5 36	6 23	8 48	
3	Sun.	●	♌	5 27	6 30	9 15	5 36	6 21	9 28	
4	Mo.	●	♌	5 28	6 28	9 53	5 37	6 20	10 12	
5	Tu.	●	♌	5 29	6 27	10 37	5 37	6 19	10 59	
6	We.	●	♌	5 30	6 25	11 24	5 38	6 17	11 49	
7	Th.	●	♌	5 32	6 23	morn	5 39	6 16	morn	
8	Fri.	●	♌	5 33	6 22	0 17	5 39	6 15	0 42	
9	Sat.	●	♌	5 34	6 20	1 13	5 40	6 14	1 38	
10	Sun.	●	♌	5 35	6 18	2 14	5 41	6 12	2 35	
11	Mo.	●	♌	5 36	6 16	3 14	5 41	6 11	3 33	
12	Tu.	●	♌	5 37	6 14	4 15	5 42	6 10	4 30	
13	We.	●	♌	5 38	6 13	rises.	5 43	6 8	rises.	
14	Th.	●	♌	5 39	6 11	5 51	5 43	6 7	6 51	
15	Fri.	●	♌	5 40	6 9	7 20	5 44	6 6	7 24	
16	Sat.	●	♌	5 41	6 7	7 46	5 45	6 4	7 55	
17	Sun.	●	♌	5 42	6 6	8 14	5 45	6 3	8 27	
18	Mo.	●	♌	5 43	6 4	8 45	5 46	6 2	9 2	
19	Tu.	●	♌	5 44	6 2	9 20	5 47	6 0	9 40	
20	We.	●	♌	5 45	6 0	10 0	5 47	5 59	10 22	
21	Th.	●	♌	5 46	5 59	10 45	5 48	5 58	11 10	
22	Fri.	●	♌	5 47	5 57	11 36	5 48	5 57	morn	
23	Sat.	●	♌	5 49	5 55	morn	5 49	5 55	0 1	
24	Sun.	●	♌	5 50	5 53	0 35	5 49	5 53	0 58	
25	Mo.	●	♌	5 51	5 52	1 40	5 50	5 52	2 0	
26	Tu.	●	♌	5 52	5 50	2 48	5 51	5 51	3 4	
27	We.	●	♌	5 53	5 48	4 2	5 52	5 49	4 12	
28	Th.	●	♌	5 54	5 46	5 19	5 52	5 48	5 24	
29	Fri.	●	♌	5 55	5 45	sets.	5 53	5 47	sets.	
30	Sat.	●	♌	5 56	5 43	7 10	5 54	5 46	7 22	

SEPTEMBER, 1905.

Eastern Standard Time—75th Meridian.

Moon Rises before or souths sets after Sun  
 For Pac Mercury Venus coast rises rises between 6 p m and 6 a m  
 add 6 m before before  
 Date p m H M H M 6 8 10 12 2 4 6

Planetary configurations and other phenomena



3 a m Moon passes Vesta.  
 Mars near Antares.  
 2 p m Moon passes Mars.  
 7th, 6 a m Moon passes Uranus.  
 2 p m Mercury stationary.  
 7th, 7 p m Moon lowest.  
 11 a m Uranus stationary.  
 7 p m Moon passes Saturn.  
 12 a m Venus crosses Ecliptic.  
 12th, 11 p m Mercury crosses Ecliptic.  
 Venus enters Leo.  
 6 a m Mercury farthest W of Sun.  
 Sun enters Virgo.  
 1 p m Mercury nearest Sun.  
 9 p m Moon passes Jupiter.  
 1 a m Moon occults Aldebaran.  
 22d, 11 a m Moon highest.  
 5 p m Moon passes Neptune.  
 12 m Sun enters Libra (sign).  
 25th, 4 p m Jupiter stationary.  
 4 p m Venus passes Regulus.  
 7 a m Moon passes Venus.  
 10 p m Moon passes Mercury.  
 Saturn near Iota Aquarii.  
 Mars enters Sagittarius.

Planets on Sept 1	Constellation
Sun	Leo
Mercury	Leo
Venus	Cancer
Mars	Scorpio
Jupiter	Taurus
Saturn	Aquarius
Uranus	Sagittarius
Neptune	Gemini

Meteor Showers	Date	Radiant	Meteors
3-8	Andromeda	v. swift	
5-15	Persens	swift	
21	Aries	slow	
27	Orion	streaks	

Morning stars	Evening stars
Mercury	Mars
Venus	Jupiter
Neptune	Saturn
	Uranus

Minima of Algol	Date	Time
Sept 5	8 32 p m	
14	10 59 a m	
23	1 26 a m	

When Polaris is North	Date	Time
Sept 1	2 45 a m	2 43 p m
10	2 10	2 8
20	1 30	1 28
30	12 51	12 49

Moon nearest the Earth, 1st, 6 a m.  
 Moon farthest from Earth, 16th, midnight.  
 Moon nearest the Earth, 29th, noon.

For intermediate dates add 2d 20h 49m.

For intermediate dates add 11h 53m.





**S** E P T E M B E R

## SEPTEMBER.

**NORTH**—Hyacinths, tulips and most of the varieties of lilies may be planted this month. Pansies, daisies, mignonettes, sweet alyssum, candytuft, etc., should be put out. New plantings of strawberry plants may still be made from runners which were layered in pots. The sooner they are planted the better. If they make runners, they should be closely trimmed back as mentioned last month. Cut out and thin the raspberries and blackberries, if not done. Tender plants should be carried in under glass. Violets are hardy and may be left out until after a light frost. Do not let the runners grow on them, but trim the same as strawberries. Repair the greenhouses and put them in order for cold weather. Continue earthing up celery. Harvest onions, beets, turnips, cucumbers, squash and melons. The main crop of spinach or sprouts which is wanted for winter or spring use should be sown. The flat sort of turnips may still be sown first of the month. Corn and apples should be gathered and many kinds of vegetables taken to market. Give poultry and swine liberal rations so that they may lay on fat during the cool autumn weather. Grass land may be seeded down. Rye is often sown on vacant land at this time.

**SOUTH**—Carrots may be sown for a late crop. For succession, sow lettuce, cabbage and winter radishes for early spring marketing. Give celery plants thorough cultivation and sow a few turnips. Transplant cabbage and cauliflower. In the latitude of Virginia, start early greenhouse crops, such as lettuce. Beans may still be sown. House tobacco and keep the teams and plows busy fallowing. Pick cotton. Sow fall oats, rye, turnips, cabbage, collards, beets, radishes, lettuce, etc., for winter use.

## THE ZODIAC.

The Zodiac is a band 16 degrees in width, extending around the heavens. The Sun's path, or Ecciptic, is the middle line of the Zodiac. The Moon and principal planets, as well as the Sun, are always found within this belt. It is divided into 12 equal parts, called Signs of the Zodiac, which take their names from the 12 Zodiacal Constellations included in this belt. The signs and constellations of the same name are not coincident. For instance, the Sun enters the sign Aries at the beginning of Spring, but still remains in the constellation Pisces.

The names of the Signs of the Zodiac in their order are: Aries, the Ram; Taurus, the Bull; Gemini, the Twins; Cancer, the Crab; Leo, the Lion; Virgo, the Virgin; Libra, the Scales; Scorpio, the Scorpion; Sagittarius, the Archer; Capricornus, the Goat; Aquarius, the Water Bearer; Pisces, the Fishes. They are often recalled by the following bit of rhyme:

The Ram, the Bull, the Heavenly Twins,  
 And next the Crab, the Lion shines,  
 The Virgin and the Scales,  
 The Scorpion, Archer and Sea-goat,  
 The Man that bears the watering-pot,  
 And Fish with glittering tails.

# 10th Month.      **OCTOBER.**      1905.

Moon's Phases.	Eastern Time.			Central Time.			Mountain Time.		
	D.	H.	M.	D.	H.	M.	D.	H.	M.
First Quarter .....	5	7	54 Morn.	5	6	54 Morn.	5	5	54 Morn.
Full Moon .....	13	6	3 Morn.	13	5	3 Morn.	13	4	3 Morn.
Last Quarter .....	21	7	51 Morn.	21	6	51 Morn.	21	5	51 Morn.
New Moon .....	28	1	58 Morn.	28	0	58 Morn.	27	11	58 Even.

Day of Mo.	Day of Wk.	Light and Dark Moon	Moon's Phase	Calendar—N. States.			Calendar—S. States.			Weather Forecasts.
				Lat. 42° +			Lat. 33° +			
				Sun Rises	Sun Sets	Moon Sets.	Sun Rises	Sun Sets	Moon Sets.	
H. M.	H. M.	H. M.	H. M.	H. M.	H. M.					
1 Sun.	☉	☽	☽	5 57	5 41	7 49	5 54	5 44	8 5	Storm wave. Hurricane over Fla. and South Atlantic seaboard.
2 Mo.	☉	☽	☽	5 59	5 39	8 31	5 55	5 43	8 52	
3 Tu.	☉	☽	☽	6 0	5 38	9 18	5 56	5 42	9 43	
4 We.	☉	☽	☽	6 1	5 36	10 12	5 56	5 40	10 37	Cool period. Falling temperature and killing frosts as far south as Oklahoma, Tennessee and Ga.
5 Th.	☉	☽	☽	6 2	5 34	11 8	5 57	5 39	11 32	
6 Fri.	☉	☽	☽	6 3	5 33	morn	5 58	5 38	morn	
7 Sat.	☉	☽	☽	6 4	5 31	0 8	5 59	5 36	0 30	
8 Sun.	☉	☽	☽	6 5	5 29	1 8	5 59	5 35	1 28	
9 Mo.	☉	☽	☽	6 7	5 27	2 9	6 0	5 34	2 24	Unsettled. Blustery and cloudy at all points in the West and Southwest.
10 Tu.	☉	☽	☽	6 8	5 26	3 10	6 1	5 33	3 22	
11 We.	☉	☽	☽	6 9	5 24	4 11	6 1	5 32	4 17	
12 Th.	☉	☽	☽	6 10	5 23	5 11	6 2	5 31	5 11	
13 Fri.	☉	☽	☽	6 11	5 21	rises.	6 3	5 29	rises.	Warm wave. A widely extended warm wave, spreading over all sections.
14 Sat.	☉	☽	☽	6 12	5 19	6 16	6 4	5 28	6 28	
15 Sun.	☉	☽	☽	6 14	5 18	6 45	6 5	5 27	7 1	
16 Mo.	☉	☽	☽	6 15	5 16	7 18	6 5	5 26	7 38	Dangerous gales on the Great Lakes.
17 Tu.	☉	☽	☽	6 16	5 15	7 57	6 6	5 25	8 19	
18 We.	☉	☽	☽	6 17	5 13	8 40	6 7	5 23	9 4	
19 Th.	☉	☽	☽	6 18	5 11	9 27	6 8	5 22	9 52	Cool wave. Cold, frosty nights and bright, sunny days in all sections West and Northwest.
20 Fri.	☉	☽	☽	6 19	5 10	10 22	6 8	5 21	10 46	
21 Sat.	☉	☽	☽	6 21	5 8	11 22	6 9	5 20	11 44	
22 Sun.	☉	☽	☽	6 22	5 7	morn	6 10	5 19	morn	
23 Mo.	☉	☽	☽	6 23	5 5	0 23	6 11	5 18	0 46	Unsettled period. Weather threatening in West and Southwest sections.
24 Tu.	☉	☽	☽	6 24	5 4	1 37	6 12	5 17	1 50	
25 We.	☉	☽	☽	6 25	5 3	2 49	6 13	5 16	2 57	
26 Th.	☉	☽	☽	6 27	5 1	4 8	6 14	5 15	4 8	Dry, chilly winds over all Western, Central States.—Damp and foggy in the East.
27 Fri.	☉	☽	☽	6 28	5 0	5 21	6 14	5 14	5 16	
28 Sat.	☉	☽	☽	6 29	4 58	sets.	6 15	5 13	sets.	
29 Sun.	☉	☽	☽	6 30	4 57	6 20	6 16	5 12	6 40	
30 Mo.	☉	☽	☽	6 31	4 56	7 8	6 16	5 11	7 31	
31 Tu.	☉	☽	☽	6 32	4 54	8 0	6 17	5 10	8 25	

OCTOBER, 1905.

Eastern Standard Time--75th Meridian.

Moon Rises before or souths sets after Sun Light and dark between 6 p m and 6 a m

For Pac coast add 6 m before

Date	p m	H M	H M	H M
1	2 32	0 43	2 41	
2	3 30	0 39	2 40	
3	4 27	0 36	2 40	
4	5 23	0 32	2 39	
5	6 18	0 28	2 38	
6	7 10	0 24	2 37	
7	8 0	0 20	2 35	
8	8 46	0 15	2 34	
9	9 33	0 11	2 33	
10	10 17	0 8	2 32	
11	11 0	0 5	2 31	
12	11 42	Sets	2 30	
13	a m	after	2 28	
14	12 24	0 8	2 27	
15	1 7	0 9	2 26	
16	1 51	0 10	2 25	
17	2 37	0 12	2 23	
18	3 24	0 13	2 22	
19	4 14	0 15	2 21	
20	5 4	0 16	2 20	
21	5 55	0 17	2 20	
22	6 47	0 18	2 19	
23	7 40	0 19	2 17	
24	8 33	0 20	2 16	
25	9 27	0 21	2 15	
26	10 21	0 22	2 14	
27	11 17	0 23	2 14	
28	p m	0 25	2 13	
29	1 13	0 26	2 12	
30	2 12	0 27	2 11	
31	3 11	0 29	2 10	



Planetary configurations and other phenomena

4th, 2 a m Neptune 90 Deg from Sun.  
 4th, 7 a m Moon passes Mars.  
 12 m Moon passes Uranus.  
 1 a m Moon lowest.  
 10 p m Venus near Chi Leonis.  
 3 p m Mars passes Uranus.  
 3th, 10 p m Moon passes Saturn.  
 3 a m Mercury passes Sun.  
 Venus enters Virgo.  
 3 p m Venus nearest Sun.  
 15th, 1 a m Mars farthest S of Sun.  
 12 a m Moon occults Gamma Tauri.  
 17th, 2 a m Moon passes Jupiter.  
 6 p m Moon highest.  
 12 a m Moon passes Neptune.  
 8 a m Mercury crosses Ecliptic.  
 Mercury enters Libra.  
 9 p m Sun enters Scorpio (sign).  
 8 a m Venus passes Eta Virginis.  
 4 a m Moon passes Venus.  
 4 p m Moon passes Mercury.  
 Sun enters Libra.  
 31st, 1 a m Saturn stationary.  
 10 p m Moon passes Uranus.

Positions of Sun and Planets on Oct 1

Planet	Constellation
Sun	Virgo
Mercury	Virgo
Venus	Leo
Mars	Sagittarius
Jupiter	Taurus
Saturn	Aquarius
Uranus	Sagittarius
Neptune	Gemini

Meteor Showers

Date	Radiant	Meteors
	2 Bootes	bright
	8 Taurus	streaks
	18-20* Orion	swift
	29 Gemini	v swift

M'g stars E'g stars

M'g stars	E'g stars
Mercury (until 12th)	Mercury (after 12th)
Venus	Mars
	Jupiter
	Saturn
	Uranus
	Neptune

Minima of Algol

Date	Time
Oct 1	3 53 p m
10	6 20 a m
18	8 47 p m
27	11 14 a m

When Polaris Is North

Date	Time
Oct 1	12 47 a m
10	12 12
12	12 10
20	11 34
30	11 55
	11 53

Moon farthest from Earth, 11th, 7 a m.  
 Moon nearest Earth, 27th, 11 p m.

For intermediate dates add 2d 20h 49m.

For intermediate dates add 11h 58m.



## OCTOBER.

**NORTH**—In northern localities, it will be well to look after the tender plants, and get them under cover during the early part of the month. In the greenhouses, avoid the use of fire heat as long as possible. However, do not let the temperature go below 50 degrees at night. If there are indications the night is likely to be a cold one, the sashes which have been raised for ventilation during the day may be let down early in the afternoon. It will be well to place the hardier sorts of plants, such as carnations, azaleas, roses, etc., in a cold frame or pit until the middle of November. They will do better here than in a greenhouse, and will make stronger and healthier roots, which will enable them to withstand forcing much better than when they are placed in the greenhouse. Watch for and destroy insects. Fall bulbs, such as tulips and hyacinths, may be planted during the month. Gladioli, caladiums, tuberoses, dahlias, etc., which were planted in the spring, should be taken up, dried and put away in some dry place which is free from frost. All sorts of fruit trees and shrubs may be set out this month. If the planting is done late in the month, a liberal dressing of mulch should be applied as a protection to the roots during winter. Strawberries layered in pots may yet be planted early in the month. Great care should be taken to trim the runners from early plantings. Finish up harvesting apples and corn. Potato digging and gathering root crops should be done this month. Cut the silage corn in the glaze. In the vegetable garden, this is one of the busiest fall months. Celery is in full growth and requires earthing up, and during the last part of the month some may be stored away in trenches. Sweet potatoes, parsnips, beets, squash, etc., not intended to be left in the ground during the winter, should be dug by the end of the month. Put in cold frames cauliflower and lettuce which was sown last month. Asparagus and rhubarb, if wanted for use in winter, should be taken up in large bunches and stored away in a pit, shed or cellar for six or eight weeks, when it may be taken into the greenhouse and packed closely under the benches. Treated this way, it will be ready for use from January to March. Spinach may be sown. Greenhouses, hotbeds, henhouses and barns should be put in order for the coming winter.

**SOUTH**—Harvest corn, sow wheat. Cotton picking is continued. Gather and house corn, ground peas, chufas and cane for seed. Grind cane. Dig, sort and store sweet potatoes and gather peas. Set out cabbage and collard plants. Cultivate all crops planted last month. Onion sets may be put in now. Sow winter spinach. Carefully earth up celery and set out more. Radishes and other successional crops may be sown. Top-dress asparagus and transplant strawberries, cabbage and cauliflower. Cucumbers in greenhouses are started this month.

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No advertisement is allowed in the columns of the *American Agriculturist* weeklies unless we believe that any subscriber can safely do business with the advertiser.

# 11th Month. NOVEMBER. 1905.

Moon's Phases.	Eastern Time.			Central Time.			Mountain Time.		
	D.	H.	M.	D.	H.	M.	D.	H.	M.
First Quarter.....	8	8	39 Even.	8	7	39 Even.	8	6	39 Even.
Full Moon.....	12	0	11 Morn.	11	11	11 Even.	11	10	11 Even.
Last Quarter.....	19	8	34 Even.	19	7	34 Even.	19	6	34 Even.
New Moon.....	26	11	47 Morn.	26	10	47 Morn.	26	9	47 Morn.

Day of Mo.	Day of Wk.	Light and Dark Moon	Moon's Place.	Calendar—N. States.			Calendar—S. States.			Weather Forecasts.
				Lat. 42° +			Lat. 33° +			
				Sun Rises	Sun Sets.	Moon Sets.	Sun Rises	Sun Sets.	Moon Sets.	
H. M.	H. M.	H. M.	H. M.	H. M.	H. M.					
1 We.	☉	☾	♏	6 33	4 53	8 57	6 18	5 9	9 22	High winds. Blustery and fall-like in N. W. Gales on N. Eng. coast. Cold wave. Heavy frosts except in extreme South. Damage to crops in Kan. & Neb. Storm wave. Great storm with high wind and dashes of rain from Texas to New York. Indian Summer. Genial, with smoky atmosphere. Hunter's moon rising like a ball of fire. Great Storms. General rains in Central & Mid. Atl. States. Wind velocities high in the Northwest. Cold wave. Very cold for Nov'r. Ice as far south as Texas, Tenn., and Georgia. Mild period. Pleasant autumn weather prevailing at all points in the South and West.
2 Th.	☉	☾	♏	6 35	4 52	9 58	6 18	5 8	10 22	
3 Fri.	☉	☾	♏	6 36	4 51	11 0	6 19	5 8	11 20	
4 Sat.	☉	☾	♏	6 38	4 49	morn	6 20	5 7	morn	
5 Sun.	☉	☾	♏	6 39	4 48	0 1	6 21	5 6	0 18	
6 Mo.	☉	☾	♏	6 40	4 47	1 3	6 22	5 6	1 15	
7 Tu.	☉	☾	♏	6 42	4 46	2 4	6 23	5 5	2 11	
8 We.	☉	☾	♏	6 43	4 45	3 4	6 24	5 4	3 7	
9 Th.	☉	☾	♏	6 44	4 44	4 3	6 25	5 4	3 59	
10 Fri.	☉	☾	♏	6 45	4 43	5 0	6 26	5 3	4 51	
11 Sat.	☉	☾	♏	6 47	4 42	5 59	6 26	5 2	5 46	
12 Sun.	☉	☾	♏	6 48	4 41	rises.	6 27	5 2	rises.	
13 Mo.	☉	☾	♏	6 49	4 40	5 56	6 28	5 1	6 18	
14 Tu.	☉	☾	♏	6 51	4 39	6 37	6 29	5 0	7 1	
15 We.	☉	☾	♏	6 52	4 38	7 23	6 30	5 0	7 48	
16 Th.	☉	☾	♏	6 53	4 37	8 14	6 31	4 59	8 40	
17 Fri.	☉	☾	♏	6 54	4 36	9 12	6 32	4 58	9 35	
18 Sat.	☉	☾	♏	6 55	4 36	10 14	6 33	4 58	10 34	
19 Sun.	☉	☾	♏	6 57	4 35	11 19	6 34	4 57	11 36	
20 Mo.	☉	☾	♏	6 58	4 34	morn	6 35	4 57	morn	
21 Tu.	☉	☾	♏	6 59	4 34	0 29	6 36	4 56	0 39	
22 We.	☉	☾	♏	7 0	4 33	1 42	6 37	4 56	1 46	
23 Th.	☉	☾	♏	7 1	4 32	2 54	6 38	4 56	2 52	
24 Fri.	☉	☾	♏	7 2	4 32	4 9	6 39	4 55	4 0	
25 Sat.	☉	☾	♏	7 4	4 31	5 26	6 40	4 55	5 12	
26 Sun.	☉	☾	♏	7 5	4 31	6 43	6 40	4 55	6 24	
27 Mo.	☉	☾	♏	7 6	4 30	sets.	6 41	4 55	sets.	
28 Tu.	☉	☾	♏	7 7	4 30	6 39	6 42	4 55	7 5	
29 We.	☉	☾	♏	7 8	4 29	7 39	6 43	4 54	8 5	
30 Th.	☉	☾	♏	7 9	4 29	8 44	6 44	4 54	9 6	

NOVEMBER, 1905.

Eastern Standard Time—75th Meridian.

Moon Rises before or souths sets after Sun Light and dark  
 For Pac Mercury Venus between 6 p m coast sets rises and 6 a m

Planetary configurations and other phenomena

Date	p m	H M	H M	6	8	10	12	2	4	G	
1	4 9	0 30	2 8								9 a m Moon lowest.
2	5 4	0 32	2 7								4 a m Moon passes Mars.
3	5 56	0 33	2 6								
4	6 45	0 35	2 5								7 a m Venus passes Theta Virginia.
5	7 32	0 37	2 4								3 a m Moon passes Saturn.
6	8 16	0 39	2 3								1 a m Venus farthest N of Sun.
7	8 59	0 40	2 2								Mercury enters Scorpio.
8	9 41	0 42	2 1								10 a m Mars nearest Sun.
9	10 23	0 42	1 59								
10	11 5	0 45	1 58								
11	11 49	0 46	1 56								
12	a m	0 49	1 56								
13	12 35	0 51	1 55								2 a m Moon passes Saturn.
14	1 22	0 53	1 53								
15	2 10	0 54	1 52								1 a m Moon highest.
16	3 0	0 55	1 51								5 a m Moon passes Neptune.
17	3 51	0 57	1 49								Mars enters Capricornus.
18	4 42	0 59	1 49								Venus enters Libra.
19	5 33	1 2	1 48								7 a m Saturn 90 Degrees from Sun.
20	6 24	1 4	1 47								10 p m Mercury farthest S of Sun.
21	7 16	1 5	1 45								Sun enters Scorpio.
22	8 7	1 6	1 42								6 p m Sun enters Sagittarius (sign).
23	9 1	1 8	1 41								
24	9 55	1 11	1 41								1 a m Jupiter 180 Degrees from Sun.
25	10 53	1 12	1 40								1 a m Moon passes Venus.
26	11 52	1 14	1 38								Mercury enters Sagittarius.
27	p m	1 13	1 37								12 a m Mercury farthest E of Sun.
28	1 52	1 14	1 35								1 a m Moon passes Mercury.
29	2 51	1 14	1 31								28th, 11 a m Moon passes Uranus.
30	3 46	1 15	1 33								28th, 8 p m Moon lowest.

Positions of Sun and Planets on Nov 1

Planet	Constellation
Sun	Libra
Mercury	Libra
Venus	Virgo
Mars	Sagittarius
Jupiter	Taurus
Saturn	Aquarius
Uranus	Sagittarius
Neptune	Gemini

Meteor Showers

Date	Radiant	Meteors
2	Taurus	bright
14-16*	Leo	streaks
20-23	Taurus	bright
17-23*	Andromeda	trains

Minima of Algol

Date	Time
Nov 5	1 40 a m
13	4 7 p m
22	6 34 a m
30	9 1 p m

Morning stars

Evening stars
Venus
Mercury
Mars
Jupiter
Saturn
Uranus
Neptune

When Polaris Is North

Date	Time
Nov 1	10 47 a m 10 45 p m
10	10 12 10 10
20	9 41 9 39
30	8 52 8 50

Moon farthest from Earth, 10th, 8 a m.  
 Moon nearest the Earth, 25th, 11 a m.

For intermediate dates add 2d 20h 49m.

For intermediate dates add 1h 58m.





## NOVEMBER.

**NORTH**—The outdoor season is drawing to a close and all harvesting still undone should be hurried to a finish. All plants should be indoors and a sharp outlook kept for cold snaps. When fire heat is finally used in greenhouses, be careful to keep up the proper moisture by syringing, sprinkling the walks, etc. Use a covering of rough litter and leaves to sprinkle over the beds of hyacinths or other fall bulbs. A good dressing of well-decayed manure added to the land will show to a good advantage the following spring. Grass seed and winter rye may be sown before the ground freezes. Fall plowing is always in order. Straw mulching of strawberries should be done this month. Prune grapevines and fruit trees. If cuttings or scions of fruit trees for grafts are desired, they should be tied in small bunches and buried in the ground until spring. Trim off the asparagus beds and burn the stems if there are berries on them. Spread a heavy dressing of manure, 3 or 4 inches thick, over the beds. Onions, cabbage, spinach or lettuce plants that are outside should be covered with 2 or 3 inches of some sort of mulching, such as straw or leaves, to protect them during the winter. Cabbages that have headed may be preserved from frost by simply pulling up and packing close together in a dry spot in the open field. In early December they should be covered up with leaves, or with a dressing of light soil. Cabbages so packed will keep until March if the covering has not been put on too early. Good ventilation should be given cold frames where cabbage and lettuce plants have been sown. On the approach of cold weather, straw mats or shutters are a great protection to plants. All kinds of root crops, cabbages and onions should be in a safe place. Bleaching celery should be finished. Parsnips and horse-radish may be left in the ground until spring, but a portion should be dug for winter use. Clear off stones, rocks and stumps. Trees and shrubbery may be transplanted.

**SOUTH**—Keep the plow going. When done in the fall, this not only benefits the soil, but greatly facilitates work at the hurried season of the spring. Put out onions. Finish picking cotton. Gather Kieffer pears. Cotton picking will claim the larger per cent of the time this month. Ginning cotton, clearing up and putting away seed, are in order. It will be well to sow winter oats, wheat or rye this month for winter pasturing, or for the grain next summer, or to be turned under, as is desired. The land needs a cover crop, both to take up and hold the plant food as it becomes available, and to check washing of the surplus soil. Southern farmers would be much better off if they would follow the practice of keeping more of their land busy during the winter months. Fruit trees of all sorts may be set out. Early peas for spring use may be sown. Set out more cabbage and onion sets. Give celery a final earthing up for bleaching. Latest radishes may be sown and lettuce may be started in hotheads or greenhouses.

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Peat yields an average of 12,000 tons to the acre.

# 12th Month. DECEMBER.

# 1905.

Moon's Phases.	Eastern Time.			Central Time.			Mountain Time.		
	D.	H.	M.	D.	H.	M.	D.	H.	M.
First Quarter .....	3	1	38 Even.	3	0	38 Even.	3	11	38 Morn.
Full Moon .....	11	6	26 Even.	11	5	26 Even.	11	4	26 Even.
Last Quarter .....	19	7	9 Morn.	19	6	9 Morn.	19	5	9 Morn.
New Moon .....	25	11	4 Even.	25	10	4 Even.	25	9	4 Even.

Day of Mo.	Day of Wk.	Light and Dark Moon	Moon's Place	Calendar—N. States.			Calendar—S. States.			Weather Forecasts.
				Lat. 42° +			Lat. 33° +			
				Sun Rises	Sun Sets	Moon Sets.	Sun Rises	Sun Sets	Moon Sets.	
H. M.	H. M.	H. M.	H. M.	H. M.	H. M.					
1	Fri.	☉	♊	7 10	4 29	9 47	6 45	4 54	10 8	Storm period.—Tropical storm with high wind trav. fr. Gulf est. to Great Lakes.
2	Sat.	☉	♋	7 11	4 29	10 51	6 46	4 54	11 6	
3	Sun.	☉	♌	7 12	4 28	11 53	6 46	4 54	morn	
4	Mo.	☉	♍	7 13	4 28	morn	6 47	4 54	0 3	Squally period.—Wind and bluster over South & Southwest. Rain and snow in the northern border.
5	Tu.	☉	♎	7 14	4 28	0 55	6 48	4 54	1 2	
6	We.	☉	♏	7 15	4 28	1 53	6 49	4 54	1 52	
7	Th.	☉	♐	7 16	4 28	2 50	6 49	4 55	2 44	Cold wave, Sharp, cold spell, with ice and frozen ground in West., Cen. & M. At. St.
8	Fri.	☉	♑	7 17	4 28	3 51	6 50	4 55	3 40	
9	Sat.	☉	♒	7 18	4 28	4 49	6 50	4 55	4 34	
10	Sun.	☉	♓	7 18	4 28	5 48	6 51	4 55	5 28	Mild period. Fine, genial weather at all points. Bright moonlit nights and fine, clear days.
11	Mo.	☉	♊	7 19	4 28	rises.	6 52	4 56	rises.	
12	Tu.	☉	♋	7 20	4 28	5 19	6 52	4 56	5 45	
13	We.	☉	♌	7 21	4 28	6 10	6 53	4 57	6 35	Heavy rains over La., Miss., Ark. and Tenn. Cent. & E. St. showery.
14	Th.	☉	♍	7 22	4 29	7 7	6 53	4 57	7 31	
15	Fri.	☉	♎	7 23	4 29	8 7	6 54	4 58	8 28	
16	Sat.	☉	♏	7 23	4 29	9 11	6 54	4 58	9 28	Mild period. Fine, genial weather at all points. Abnormal warmth for Dec'r over S. & S. W. sections.
17	Sun.	☉	♐	7 24	4 29	10 17	6 55	4 58	10 30	
18	Mo.	☉	♑	7 25	4 30	11 26	6 55	4 59	11 34	
19	Tu.	☉	♒	7 25	4 30	morn	6 56	4 59	morn	Cold wave. Severe weather general. Rain, sleet and snow at all points in the West and East.
20	We.	☉	♓	7 26	4 31	0 40	6 56	4 59	0 40	
21	Th.	☉	♊	7 26	4 32	1 48	6 57	5 0	1 42	
22	Fri.	☉	♋	7 27	4 32	3 3	6 58	5 1	2 50	Cold wave. Severe weather general. Rain, sleet and snow at all points in the West and East.
23	Sat.	☉	♌	7 27	4 33	4 18	6 58	5 1	4 1	
24	Sun.	☉	♍	7 27	4 33	5 31	6 59	5 2	5 10	
25	Mo.	☉	♎	7 28	4 34	6 41	6 59	5 2	6 17	Cold wave. Severe weather general. Rain, sleet and snow at all points in the West and East.
26	Tu.	☉	♏	7 28	4 35	sets.	7 0	5 3	sets.	
27	We.	☉	♐	7 28	4 35	6 22	7 0	5 3	6 46	
28	Th.	☉	♑	7 29	4 36	7 28	7 1	5 4	7 49	Cold wave. Severe weather general. Rain, sleet and snow at all points in the West and East.
29	Fri.	☉	♒	7 29	4 36	8 34	7 1	5 4	8 50	
30	Sat.	☉	♓	7 29	4 37	9 38	7 2	5 5	9 50	
31	Sun.	☉	♊	7 30	4 38	10 42	7 2	5 5	10 49	

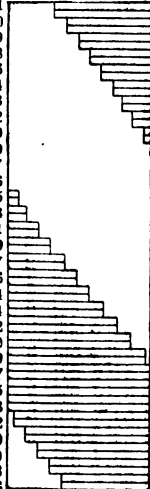
DECEMBER, 1905.

Eastern Standard Time—75th Meridian.

Moon Rises before or souths sets after Sun Light and dark between 6 p m and 6 a m  
 For Pac Mercury Venus coast sets rises and 6 a m  
 add 6 m after before Morn Eye

Planetary configurations and other phenomena

Date	p m	H M	H M	6	8	10	12	2	4	6
1	4 39	1 15	1 31							
2	5 27	1 16	1 30							
3	6 13	1 14	1 29							
4	6 57	1 13	1 28							
5	7 39	1 9	1 26							
6	8 21	1 7	1 24							
7	9 3	1 3	1 23							
8	9 46	1 0	1 22							
9	10 31	0 55	1 20							
10	11 18	0 49	1 19							
11	a m	0 42	1 17							
12	12 6	0 36	1 16							
13	12 57	0 29	1 15							
14	1 48	0 20	1 13							
15	2 39	Rises	1 11							
16	3 31	before	1 9							
17	4 21	0 27	1 7							
18	5 12	0 30	1 6							
19	6 2	0 49	1 4							
20	6 52	1 0	1 4							
21	7 44	1 8	1 2							
22	8 38	1 16	1 0							
23	9 34	1 22	0 59							
24	10 33	1 30	0 57							
25	11 33	1 33	0 56							
26	p m	1 36	0 53							
27	1 30	1 40	0 52							
28	2 26	1 43	0 50							
29	3 17	1 45	0 49							
30	4 6	1 46	0 48							
31	4 51	1 46	0 46							



4 a m Moon passes Mars.  
 12 m Moon passes Saturn.  
 2 a m Mercury stationary.  
 Venus enters Scorpio.  
 10 p m Mercury crosses Ecliptic.  
 1 a m Moon passes Jupiter.  
 10th, 5 p m Venus passes Beta Scorpii.  
 10th, 8 p m Moon occults Aldebaran.  
 10 a m Moon highest—passes Neptune.  
 12 m Mercury nearest Sun.  
 5 p m Mercury passes Sun.  
 Sun enters Sagittarius.  
 Mars near Delta Capricorni.  
 Mars enters Aquarius.  
 9 p m Mercury near Venus.  
 7 a m Sun enters Capricornus (sign).  
 4 p m Moon occults Gamma Librae.  
 4 p m Moon passes Mercury.  
 11 p m Mars passes Saturn.  
 8 a m Moon lowest.  
 28th, 2 p m Uranus passes Sun.  
 Venus enters Sagittarius.  
 30th, 12 a m Moon passes Saturn.  
 6 a m Moon passes Mars.  
 3 a m Neptune 180 Degrees from Sun.

Positions of Sun and Planets on Dec 1

Planet	Constellation
Sun	Scorpio
Mercury	Sagittarius
Venus	Libra
Mars	Capricornus
Jupiter	Taurus
Saturn	Aquarius
Uranus	Sagittarius
Neptune	Gemini

Meteor Showers

Date	Radiant	Meteors
4	Ursa Major	swift
6	Taurus	bright
10-12*	Gemini	swift
25	Gemini	v. slow

Minima of Algal

Date	Time
Dec 9	11 28 a m
18	1 55 a m
26	4 22 p m

M'g stars E'g stars

M'g stars	E'g stars
Mercury (after 15th)	Mercury (until 15th)
Venus	Mars
Uranus (after 26th)	Jupiter
	Saturn
	Uranus (until 26th)
	Neptune

When Polaris Is North

Date	Time
Dec 1	6 48 a m 6 48 p m
10	8 12 8 10
20	7 33 7 31
30	6 53 6 51

Moon farthest from Earth, 7th, 5 p m.  
 Moon nearest the Earth, 23d, 5 p m.

For intermediate dates add 2d 20h 49m.

For intermediate dates add 11h 58m.



## DECEMBER.

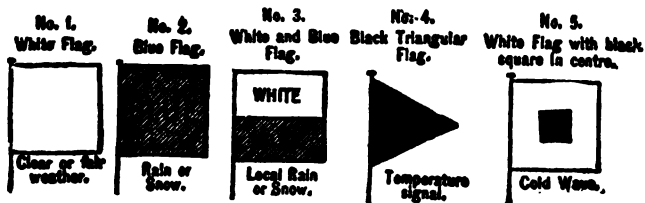
**NORTH**—This is decidedly a winter month and farm work soon settles into the winter routine of caring for stock, hauling and sawing wood, marketing crops, carting manure, etc. Close attention should be given tender plants. A little neglect for only one night in cold December weather may spoil all the hard labor of spring and fall. Extra vigilance is required and strong fires in the greenhouses must be kept up during the night. In greenhouses, if the night starts out very cold, it is well to set plants under the benches or on the walks, and as far as possible remove them from cold places. Paper thrown lightly over the tops may save injury. Grapevines and raspberries may be laid down as near the ground as possible and covered with a rough litter or leaves or even a few inches of soil. Strawberries should be mulched. Protect spinach, kale and strawberries with a light covering where needed. Prepare compost and tend to hotbeds. Snow which accumulates on cold frames or greenhouses should be removed. During bad weather hotbed mats may be made, sashes mended and tools repaired. Every farmer should spend more time in reading, that he may keep up with the times.

**SOUTH**—Strip tobacco. Replenish the wood pile, for the cold weather now is sure to follow. Do not forget your live stock; they need constant attention at this time. See that they are snugly housed. Oats in the far south may be sown yet this month. Clean up new land and plow if possible. The improvement of buildings should receive attention. Fruit trees may still be planted and most varieties, except peaches, may be pruned and put in shape. More onion sets may be planted. Celery is earthed up and bleached. Sow cabbage for winter heading. Transplant October sown plants. Peas may be sown for spring use. As is the case with the northern farmer, more reading should be done. Make your plans for the coming year, and see that your plans go through.

## DIRECT LEGISLATION.

Oregon is the only state as yet to put direct legislation into practice, although Utah and South Dakota both have direct legislation amendments to their constitutions. Last June two statutes, one for direct primaries and one for liquor local option, were enacted there, as allowed by the initiative and referendum amendment to the constitution, by direct vote of the people, without the intervention of legislature. The initiative means the proposal of a law by a percentage of the voters, which must then go to the referendum, which means the vote at the polls on a law proposed through the initiative, or on any law-making body, whose reference is petitioned for by a percentage of the voters. The referendum protects the citizens from bad laws which the legislature might enact.

## The Weather



### FLAG SIGNALS OF WEATHER BUREAU.

No. 1—Clear or fair weather.

No. 2—Rain or snow.

No. 3—Local rain or snow.

No. 4—Temperature; placed above 1, 2, 3, indicates warm weather; placed below, cold weather; no display, stationary temperature.

No. 5—A cold wave or sudden fall in temperature.

A special storm flag, red with black square in center, is prescribed for use in North Dakota, South Dakota, Minnesota, Iowa, Nebraska, Wyoming, Montana, Colorado, Kansas, Indian Territory, Oklahoma and Texas to indicate high winds accompanied with snow.

When the signs are displayed on poles, the signals should be arranged to read downward.

### WEATHER CONDITIONS DURING CROP SEASON OF 1904.

The amounts of precipitation for the crop season of 1904, from March 1 to October 3, were much below the average record in the Atlantic coast districts south of New England, and generally throughout the southern states, except in the extreme south of Florida and parts of Texas. There was also a general deficiency in northern Iowa and Illinois, throughout the greater part of the upper Missouri valley, and on the north Pacific coast. Generally throughout the middle and southern Pacific coast states, in the country from the central and southern Rocky mountain region eastward over the lower Missouri valley with a narrow extension into Indiana and Ohio, and over most of Minnesota, Wisconsin and New England, the seasonal precipitation was in excess of the average.

During this period, the states of Kansas and Missouri received the worst wetting down, the rainfall over the greatest portion of these states exceeding 40 inches. In the districts bordering on this area of excessive moisture, thence southward

over the lower Mississippi valley, the whole of the gulf coast, in Florida and the greater portion of the Carolinas, the rainfall measured from 24 to over 36 inches. Much of New England, limited districts in the upper Ohio valley, Michigan and Minnesota, and on the northern and central Pacific coast, received 24 to 30 inches of rainfall. The semi-arid regions of interior and southern California, most of Nevada and lower Arizona, and parts of Utah, as well as parts of Oregon and Montana, were visited by the lightest fall of rain, from 2 to 6 inches. Eastward of this area until the 105th meridian is reached the rainfall for the season was 6 to 12 inches.

There was a deficiency in temperature during the crop season over most of the districts east of the Rocky mountains, the exceptions being limited portions of the Atlantic coast states, larger areas in the eastern gulf states, and practically the entire western gulf region. In the central valleys and upper lake region there were departures from the normal temperature amounting to from 1 to 3 degrees per day. Over the southern portions of the country there was an excess in temperature, but not large, being not more than 1 degree per day, and for the most part not that. Limited areas of deficient temperature occurred in the Rocky mountains and on the north Pacific coast, but west of the Rockies the seasonal departures were generally, though slightly, in excess.

The maps on the three following pages show clearly each of these weather conditions here described during the crop season.

### APPROPRIATIONS BY CONGRESS FOR SIX YEARS,

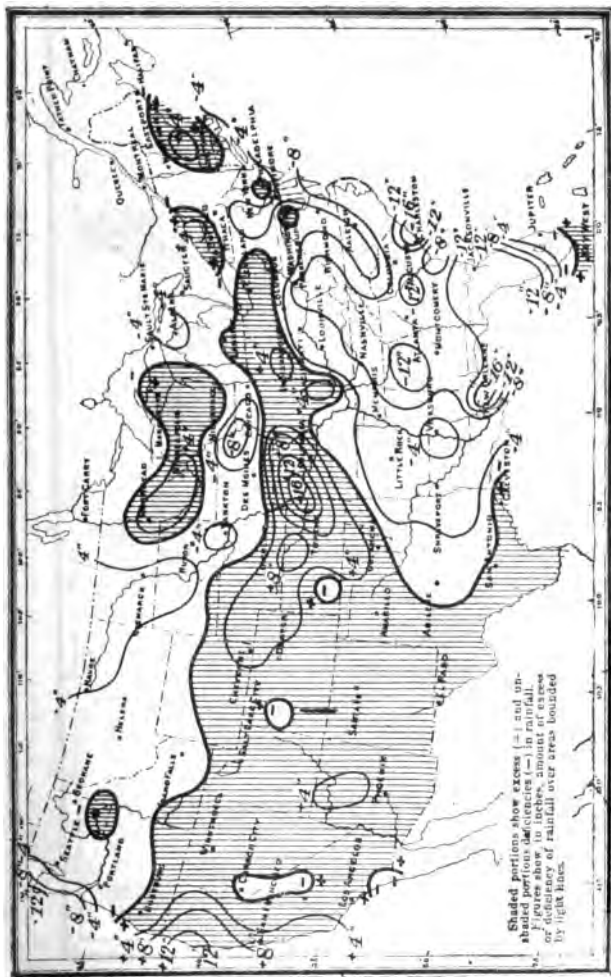
1898-1903,

[In round millions.]

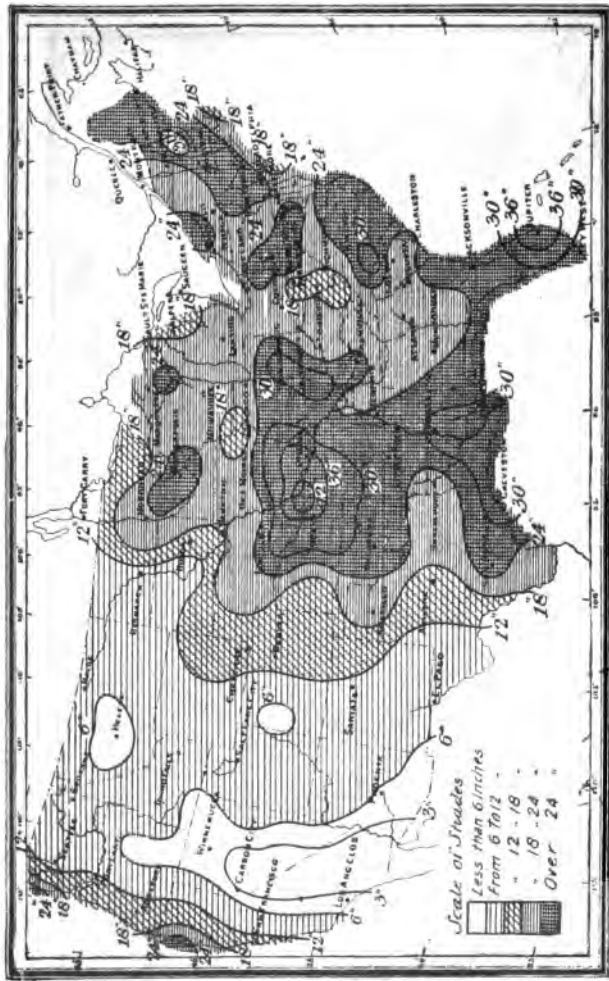
	1898	1899	1900	1901	1902	1903
Deficiencies .....	\$8.5	\$347.1	\$46.8	\$13.7	\$13.2	\$24.9
Legislative, executive, judicial..	21.6	21.6	23.3	24.1	24.5	25.3
Sundry civil .....	34.3	33.9	39.3	49.5	54.5	54.3
Support of army .....	23.1	23.1	80.4	114.2	115.7	91.7
Naval service .....	33.0	56.0	48.0	61.1	78.1	78.8
Indian service .....	7.6	7.6	7.5	8.1	8.7	8.9
Rivers and harbors .....	19.2	14.4	25.1	16.1	7.0	32.5
Forts and fortifications.....	9.5	9.3	4.9	7.3	7.3	7.2
Military academy .....	.4	.4	.5	.6	.7	2.6
Pensions .....	141.2	141.2	145.2	145.2	145.2	139.8
Consular and diplomatic .....	1.6	1.7	1.7	1.7	1.8	1.9
Agricultural department .....	3.1	3.5	3.7	4.0	4.5	5.2
District of Columbia.....	6.1	6.4	6.8	7.5	8.5	8.5
Miscellaneous .....	1.1	6.0	28.7	3.2	7.9	4.0
<b>Total .....</b>	<b>\$311.1</b>	<b>\$673.0</b>	<b>\$462.5</b>	<b>\$457.1</b>	<b>\$478.9</b>	<b>\$486.4</b>

The appropriations for the postoffice department are indefinite, and are therefore not given.





DEPARTURES FROM NORMAL PRECIPITATION, CROP SEASON OF 1904.



TOTAL RAINFALL IN INCHES, MARCH 1, 1904, TO OCTOBER 3, 1904.



DEFICIENCIES IN TEMPERATURE FROM A NORMAL DURING CROP SEASON.

## HIRED HELP ON THE FARM.

"Help is just like produce—the best will bring the best prices in any market, and if a farmer is not willing to pay good wages, men will go elsewhere." So says a successful farmer and his sentiments are voiced by all other farmers of his class. One and all agree that with the competition of the city factories, where men can get employment the year round at good wages, and without toiling from early dawn till after dark, farmers must strive to offer better inducements.

There is no occupation in which men and women can so easily save all their wages as working on an American farm, with room and board provided. These wages quickly accumulate if properly invested, and it will not take many years for the hired man to become an owner. But the only way for a man to learn farming and insure success is by farming out.

The best way to get good help or for people to get good positions is through a little advertisement in The Help Bureau of the American Agriculturist weeklies. The cost is only 4 cents per word in Orange Judd Farmer of Chicago, 5 cents in American Agriculturist at New York, and 4 cents in The New England Homestead, at Springfield, Mass., these papers covering the respective sections.

## STATE FREE EMPLOYMENT BUREAUS.

Connecticut—New Haven, 39 Church St.; Hartford, 59 Trumbull St.; Bridgeport, 1005 Broad St.; Norwich, 43 Broadway; Waterbury, 36 North Main St.  
 Illinois—Chicago, 429 Wabash Ave., 234 Chicago Ave., corner Canal and Randolph Sts.; Peoria, corner South Adams and Liberty Sts.

Kansas—Topeka, State House; Kansas City, 4 City Hall.

Maryland—Baltimore, 110 West Saratoga St.

Minnesota—Duluth, 407 West Michigan St.

Missouri—St. Louis, 813½ Chestnut St.; Kansas City, 207 Nelson Bldg.; St. Joseph, 429 Francis St.

Montana—Butte, City Hall; Kallspel.

Nebraska—Lincoln, State Capitol.

New York—New York City, 107 East 31st St.

Ohio—Cleveland, Arcade Bldg.; Columbus, corner Broad

and High Sts.; Cincinnati, 206 West Seventh St.; Dayton, corner Fifth and Main Sts.; Toledo, Chamber of Commerce.

West Virginia—Wheeling, 143 16th St.

Wisconsin—Milwaukee, 153 Second St.; Superior, 903-903½ Tower Ave.

Ohio was the first state in the union to realize the benefits to be derived from state employment offices. In 1890 offices were established in each of the five cities named above, and these have been conducted ever since that date with most satisfactory results. No compensation or fee is charged or received, directly or indirectly, from persons applying for employment or help through any such bureau in any state where bureaus are established. All expenses of the bureaus are paid by the state.

# **Commercial Agriculture**

## **Markets and Marketing**

Three crops alone grown in the United States in 1904, corn, cotton and wheat, had an aggregate value of two billion dollars. Further billions are represented in other farm products, field and orchard crops, live stock, output of the dairy, etc. In nearly a billion and a half dollars of merchandise exported from our coasts each year, approximately two-thirds come from the soil. The farming industry is thus the basis of the national wealth and prosperity.

The six million farms scattered over our broad land represent the partners, the brotherhood, in this great enterprise of producing not only enough for home requirements, but the ever liberal surplus, mounting into the hundreds of millions dollars, for export to less fortunate nations. This graphic showing of just what the business of farming amounts to, suggests at once that farmers should be business men.

The subject of Commercial Agriculture includes in a large way this whole question of markets and marketing. It is, after all, as important as the understanding of crop productions. In these days of sharp competition, it is very necessary that the agriculturist should not only know how to raise a crop, but should know how to dispose of it so as to get the most profit as a result of money and labor invested. It is not our purpose to speak here of the gain secured through converting grain and hay crops into beef, pork and mutton, or milk into dairy products, etc.; rather to portray the various methods of handling and marketing farm products in the raw or original state.

### **APPROVED MARKETING FORMS IN VOGUE.**

Methods of moving farm products from the producer to the consumer have shown radical changes in the last generation, although the course now followed is much the same as for a year or two past. There is still the very simple plan of marketing farm produce in the way of peddling it

from wagons to the doors of consumers in villages, towns and cities. While this method is one much employed by small farmers, gardeners and fruit growers, it can at times be profitably followed on a scale of considerable magnitude if the business is carefully and thoroughly developed, even though from a small beginning. Innumerable families in all of our centers of population who are entirely dependent upon purchases for food supplies, are more than willing to secure an important part direct from producers. They demand strictly fresh and sound produce, however, and for such are usually willing to pay full market rates. In many instances families will be willing to pay a little more for something especially nice, rather than buy a product a little less desirable at the store even at a lower figure.

One thing is sure. Whatever is offered to consumers direct from the farmer's wagon must be first-class in every respect, attractive in appearance and sound and sweet in quality. A mistake often made is, presuming that the average housekeeper will pay a big bonus to get fresh country stock. She is willing to pay a full price, but that is all; in securing this the producer, as a rule, should be satisfied, because he saves all the middlemen's charges and it is usually a quick trade with immediate and profitable returns.

A second method of disposing of farm produce is to sell to a local grocer or marketman. This has some advantages, but like the first named can, as a rule, be carried on only in a limited way. Not infrequently the local retailer with an established family trade can handle the product of the small farmer and gardener to mutual advantage.

The farmer who produces on a larger scale can sell his grain, live stock, wool, poultry, eggs, fruits, vegetables, etc., direct to a local buyer, who in turn has his established outlet at distant large points of consumption and distribution, and after accumulating a carload or more from various farmers, ships as market conditions warrant.

A merit of this plan is the securing of a known price for the goods without special risk of loss through dishonest consignee or the annoyance and expense of express, freight or commission charges. And a positive drawback is the fact that this local middleman must take out a considerable profit to himself in order to stand shrinkage in his net returns through decline of market between the time of buying from the producer and selling at the distant city, deterioration or loss of the produce while in transit, etc. Therefore, granted a local buyer takes your grain, live hogs,

poultry or potatoes, it is reasonable to presume that he is getting a fairly large slice of the middleman's profits.

A fourth method of selling produce is shipping to customers, at distant points, previously secured, perhaps through working up a trade from small beginnings. In many instances this is a favorite and successful method, especially where the farmer has taken pains to establish a reputation for fine quality goods and honest pack and count.

#### COMMISSION MERCHANTS—CO-OPERATIVE SELLING.

Another long-established and highly regarded method through which farm produce is sold is the commission merchant, who handles by far the greater part of the farmers' surplus. This is true of perishable products, such as fruits and vegetables, and perhaps less so of poultry, eggs and hay. As for grain, live stock, etc., while they are frequently sold by the farmer direct to country buyers, they subsequently pass through the hands of commission merchants in the big cities before being finally distributed in the various channels of trade. The tendency in this age is to eliminate, so far as possible, the toll exacted by the middleman. But the day has not yet come when the commission merchant is unnecessary.

Co-operative buying and co-operative selling are successful in a small way, and there is an important future for this economy. But the farmer of to-day, in facing the practical problems of how to get the most out of his produce, is obliged to depend very largely upon commission merchants.

While co-operative buying and selling are not very generally employed, as just intimated, the fact remains that this is a field of the greatest usefulness. The co-operative movement has long been very much at the front in England and on the continent of Europe. A few very successful co-operative societies have held a place in marketing farm produce in this country; others have been inaugurated, but have fallen short of expectations, due largely to poor management. In this connection it would be interesting and helpful to individuals and to localities to secure and study thoroughly Myrick's book, *How to Co-operate*, published by Orange Judd Company, price \$1, prepaid.

Commission merchants are always found in the trade centers, where buyers are looking for needed services of this character; they understand the wants of the trade

better than the single individual who is perhaps 50 or 500 miles distant. Through long experience and the development and evolution of business methods, the commission merchant is in a position to secure the quickest distribution of such produce as is consigned to him, getting all there is in the market for the consignor. In a large sense, he is the agent for the producer and shipper, standing for their best interests, and for his compensation in a way of commission charges endeavors to do for the countryman what the latter could not do for himself.

While the commission merchant is theoretically the agent for the producer and shipper, too often he has moved away from the original plan and is practically a dealer or middleman. Here is one of the weakest phases in this whole proposition of handling farm produce on commission. It is something which has developed year by year, and never more in evidence than the past 12 months. A great many so-called commission merchants practically sell to themselves the produce which they receive from the country shipper; then in turn they resell this at an advance to outsiders, thus securing an advantage which does not appear on the surface.

This great power to make or mar the profit side of the farmer's ledger only emphasizes the necessity of securing an honest and capable commission merchant. That many are absolutely dishonest is a fact too well known to need further comment here. That many, while technically honest and ready to pay their bills, yet are tricky and more than willing to engage in sharp practices with the country shipper, is also too true. The black sheep in the flock, however, cannot long hide their color, and it should be the endeavor of everyone having dealings with such to publish to the world these trickeries. Per contra, is the necessity of dealing with reliable commission merchants, and once secured, stick to them until there is good reason for change. A common method of tricky commission merchants is to send out specious circular letters claiming to secure more than full market prices, usually quoting the various commodities at figures higher than anyone can possibly get. They thus secure consignments from the country, make any sort of return they wish, and if complaint is made pretend the goods were short in weight or measure, or damaged in quality, and pocket the difference, the consignor 99 times out of 100 being absolutely powerless to even trace the dishonesty, although he is morally certain that a wicked fraud has been done.



**FARMERS SHOULD MASTER MARKET CONDITIONS.**

The commission merchant of integrity who does the best he can for his customer finds it at times impossible to give complete satisfaction, through no fault of his own. This is particularly true with regard to perishable produce which must be handled quickly, and where price changes are liable to be rapid and violent. Country shippers are often misled through failure to fully understand true values and market quotations. While these may and should properly portray the situation when published, conditions may be entirely changed at the time the prospective shipper reads them.

Quotations governing the market at a certain hour of the day may be entirely at variance with conditions six hours later. For example, early morning prices for a given commodity may rule high, owing to an apparent scarcity, but later trains may so swell the receipts as to make a positive glut on the market, forcing dealers to sell at much lower prices than those originally obtained, in order to prevent worse loss.

Another feature of selling through commission merchants too often leads to misunderstandings and disappointment. The farmer who studies the market report finds peaches quoted at 50 to 75 cents per basket, or dressed fowls 8 to 10 cents per pound, or choice beef steers \$5.50 to \$6 per 100 pounds. He at once assumes his property ranks with the best and expects that returns will show outside quotations were secured. He fails to realize that his own produce must take its place with an enormous quantity from all sections, and that what might appear strictly choice at home would grade far below that when placed by the side of the best consignments on the market on a given day, and naturally he should not expect that his goods will always command outside quotations.

**GRADING AND PACKING COUNT FOR MUCH.**

Requisite allowance must be made for quality, realizing that even for sound stock there are several prices obtained. This suggests the wisdom first of all of making your produce as choice as possible before offering it on the market, and, furthermore, grading it properly; do not mix inferior stuff with strictly choice, even though the latter largely predominates, because the result will be an unsatisfactory lowering of the average price. The shipment of farm produce, especially perishable goods, is always a matter of considerable

uncertainty, and it naturally follows that trustworthy agents be selected to do the selling, and, furthermore, that the farmer and shipper be well posted regarding market conditions.

#### COST OF MARKETING FARM PRODUCE.

In markets of any size and importance, this includes such items as freight and express charges, storage, demurrage, cartage, weighing, inspection and commissions, but not necessarily all of these. Uniformity of charges in the different markets is quite lacking, although goods which quickly deteriorate in keeping quality are obliged to pay a heavier rate than others. The market must be big enough and broad enough to take care of any usual supply of perishable goods, and, so far as that is concerned, of a supply which for the time being may be even greater than usual.

Such perishable produce as fruits, vegetables, poultry, butter, eggs, etc., must be handled expeditiously, and must stand greater charges in proportion for selling than grain, live stock, wool, etc. From the time the goods leave the country shipping station until returns are made and check received, several charges must be borne. On goods sent to a distant town or city to be sold on commission, the railroad or vessel freight is always charged up; next comes cartage from wharf or depot to salesroom or warehouse. Goods not to be sold immediately, but held for a time in order to catch a better market, must as a rule pay storage and sometimes insurance.

Rates of commission are usually in the way of percentage on gross amount of money received from the sale of the goods. Some loss must be expected in the way of deterioration, breakage and other occasional charges, although the latter are infrequent. If unusual work is required in connection with handling the commodity, a charge is made. Iced poultry which has come from a distance is re-iced in transit and this is often true of other highly perishable stuff. If placed in cold storage for a season, there is of course a charge made. Live poultry, when sent in coops to be returned, is sometimes subject to a small charge for handling the empties.

The following table shows the usual cost of cartage in the cities named and affords a fair average of these items in all wholesale markets. Such cost is added to freight and express charges paid by the commission merchant, and charged up against the country shipper, before making any returns accompanied by check or draft.

## CARTAGE DEPOT OR DOCK TO WAREHOUSE IN CENTS.

	New York	Boston	Philadel- phia	Columbus	Cincinnati	Chicago	St. Louis	S. Francisco
Butter, p tub.....	3@5	5	3	5	—	2@2½	2½@3	6
Eggs, p case.....	3@5	3	3@7	2	—	2½@3	2@3	5
Poultry, p pkg.....	5@10	5@10	5@8	5	5	*10	3@5	25
Hides, p 100 lbs.....	†2	2½@4	10	5	—	4@6	4	2½@3
Apples, p bbl.....	5@10	5	5@7	3	5	5	4@6	5@8
Oranges, p box.....	5	3	4@5	2	2@3	2½	3½@4	4
Dried fr'ts, p 100 lbs	5	5@8	10	—	—	—	—	2½@3
Potatoes, p bbl.....	5@6	2	2@2¼	2	—	1@2	2@2½	2½
Onions, p bbl.....	5	5	—	3	2	5	6	2½
Fresh veg, p pkg....	3@7½	5@8	3@10	—	5	—	—	2½
Veal calves, each..	10	—	10	—	—	3@8	3@6	2½@4
Wool, p 100 lbs.....	3@5	—	5	3	—	1@2	4	4@5

\* p bbl. † p hide.

## RATES OF COMMISSION.

These vary greatly, but unless subject to special arrangement are usually 5 to 10% on perishable produce. Where potatoes are sold by the carload at a 5% rate, the commission per car is usually understood to be not less than \$10, otherwise 10% on amount of sale. The commission on apples is 5 to 15% in carloads; in some instances a fixed rate of about 15 cents per barrel is made, and when jobbed from the car, an additional charge of 3 to 5 cents per barrel for cartage is usually charged to country consignor. If apples are placed in cold storage, this means a charge of 25 to 50 cents per barrel for the season, from October to May, or about 10 cents per month per barrel for short storage. In the season of 1904-5 the full charge is generally 40 cents.

When sent to cold storage, eggs usually pay 35 to 40 cents per case of 30 dozen for the season of six months, or 10 cents per case per month for short storage. In warm weather a charge is frequently made of 10 cents per case for candling, work which must necessarily be repeated in the course of a few weeks, unless the eggs are sold in the meantime. During the season of candling, the loss through bad eggs runs from one-half dozen, which would be called first-class, to about two dozen per case of 40 dozen or occasionally higher.

Wool commission charges are not uniform, nor yet greatly different in the end, taking one market with another.

Commissions are 1 to 1½ cents per pound but due to competition among brokers are often somewhat shaded. Charges outside of freights and commissions include such items as cartage, storage, interest on money advanced, etc. In Boston, cartage about 8 cents per bag, storage not charged usually, but if long held about 6 cents per bag per month, interest 6% per annum on advances. New York, cartage 5 cents per 100 pounds, and if wool is rehandled for closer grading, a charge is sometimes made of ¼ cent per pound, but this is seldom an item of expense. Chicago, cartage 6 cents per bag, commission 1 cent per pound, this usually covering the charges for grading, weighing, etc. San Francisco, cartage 10 cents per bale, storage per month 15 cents per bale, insurance per month 20 cents on each \$100, commission ½ cent per pound, interest on advances rate of 10%.

In the subjoined table, the commission charges at various points apply as a rule to relatively small lots; business in a large way often being conducted at special rates according to previous agreement.

#### ACTUAL COMMISSIONS CHARGED FOR HANDLING.

	New York	Boston	Philadel- phia	Columbus	Cincinnati	Chicago	St. Louis	S. Francisco
	%	%	%	%	%	%	%	%
Butter .....	5	5	5	10	5	5	5	5
Eggs .....	5	5	5	10	5	5	5	5
Poultry .....	5	5	5	10	5	5	5	5
Hides .....	2@3	5	5	5	5	5	5	2½@6
Apples .....	10	20c bbl	5@10	8@10	10@15	5@10	5	8
Oranges .....	8@10	8	10	8@10	10	10	10	8
Small fruits .....	5@10	8	10	7@10	10	10	10	8
Dried fruits .....	5@10	4@10	5	5@10	10	5	5	5
Potatoes .....	5@10	8	7@10	10	5c bu	5@10	5	5
Onions .....	10	8	7@10	10	10@15	5@10	5	5
Fresh vegetables .....	5@10	5@8	10	10	10	10	10	8
Veals .....	5	30c	5	—	5	5	10	2@3
Wool .....	1c lb	1c lb	5	1c lb	—	1c lb	5	2½

#### HOW TO MAKE A CHOICE OF A BROKER.

Due care should be exercised in the selection of a commission merchant or broker. In cities of any considerable importance, and in many of the large towns, honorable members of this class of traders can always be found. If en-

tirely unacquainted, your local banker may be able to furnish you some particulars about the standing of individual commission concerns; and if any of the mercantile agencies, such as Bradstreet or Dun, is available, much more can be learned, although none of these instrumentalities can always know to a certainty whether a business house is inclined to be tricky even though the same may have a bank account and pay its bills promptly.

#### RATES FOR HANDLING CAR LOTS.

Goods sold on track in full cars naturally exact a smaller bill of expense than where handled in a small way, commission rates ranging usually from 2½ to 5%; this applies particularly to such articles as apples, potatoes, etc. Demurrage is a charge made by railroads for the delay or detention of cars beyond the time usually allowed for loading and unloading; 48 hours is usually considered the proper time for this work. Perishable goods are of course promptly withdrawn and distributed. In New York, such goods as hides, dried fruits, etc., are charged \$1 per day per car after the first 48 hours. In Philadelphia, the demurrage on apples or potatoes is \$2 per car, and on poultry in barrels 25 cents per package. In such western points as Columbus, Chicago, Cincinnati and St. Louis, the rate is about \$1 per car per day, while in San Francisco as high as \$3 per day is charged. These regulations are not ironclad, however, but subject to the will of transportation companies, depending upon the favor they care to show shippers, and in many instances are not enforced.

#### THE QUESTION OF SHRINKAGE

is a difficult one to handle. Butter will frequently show a loss of one pound to the tub, poultry one pound or more to 100 pounds originally shipped, hides fully 3%, oranges, fresh fruits and vegetables 5 to 20%, dried fruits 1 to 2%. Dressed veal shrinks two to four pounds per carcass, and there is sometimes a shrinkage of 2 to 4% in wool for the first month.

If the car is tight and the weights correct at point of shipment, there ought to be little shrinkage in grain, either in bulk or sacked. The shrinkage in weight in cattle, hogs and sheep is considerable, irrespective of frequent loss through overloading, resulting in serious injury or death of one or more animals. This natural loss in weight, however, is made up wholly or in part by liberal feeding and watering of live stock at point of sale just before going on the scales to be weighed.

## *The Grain Trade*

### ITS INS AND OUTS IN WORLD'S MARKET PLACES.

The United States long since took its place as a surplus country in the production of the great cereal crops. This is true all along the line. We produce much more wheat than is needed for home consumption, and the surplus is available for export in the form of both wheat and flour. The wheat crop of 1904 was far short of a full one, but in years of liberal production like that of the two preceding seasons we can easily spare 200,000,000 bushels wheat for foreign mouths. Most of the grain is consumed in the countries where grown, if export trade is normally large. Foreigners want our oats when the price is low, and there is always more or less export trade in other grains, and in field seeds. Of course, after all, the home market is the best.

What interests the American farmer is the widest character in the demand for our surplus, whether from home or foreign sources. There is always this important surplus for home requirements to dispose of. This is true of the local or village market, which will absorb a large part of the garden crop of a single community; it is so in the larger sense of country wide production and distribution of grain, and live stock, and cotton. In the single instance of our cereal crops such enormous quantities are placed on the markets of the world that it is important producers should understand some of the methods in vogue in handling these farm products. The grain trade is divided primarily into two divisions, the cash and the speculative branches. These are in many instances so closely related and interwoven that it is frequently impossible to tell just where the legitimate crosses the line into purely speculative channels. Furthermore, the transactions in the actual property are frequently influenced by the position of the speculative markets, these at times going far to control fluctuations from day to day. But in the main, the irrefragable law of supply and demand holds sway.

### THE MAKING OF THE PRICE LEVER.

That the price of a commodity is higher or lower to-day than it was yesterday, or will be to-morrow, is due to a multiplicity of influences. A factor of the highest importance and greatest force, at one time, may be relegated to the background at another and be apparently of no conse-

quence. Again, influences legitimate in every sense, and which would ordinarily leave their impress on values, are at times arbitrarily set aside by something entirely unexpected and unforeseen, but which for the moment wields great power. This general fact is much more true of such farm crops as the leading cereals, where speculation is greatly in evidence, than of such products as have no part in speculation, for various reasons—live stock, poultry and fruits and vegetables, either perishable in nature, or of such a character as to preclude any thought of bargaining and sale for future delivery in the truly speculative sense.

Probably in no product of agriculture are so many influences forceful in moving values up and down as in wheat; and this is here taken as an example portraying these things. Factors other than supply and demand include such as crop conditions at home and abroad, the foreign situation, political disturbances, either in this or foreign countries, tariff or other national legislation, forces exhibited by the concentrated capital daily enlisted in speculation, and last but by no means least, sentiment. Daily fluctuations in the price of grain, making their impress upon every bushel the farmer has to sell, and often upon other crops not yet seeded, are first registered on the big exchanges of this country and Europe.

Strange as it may seem to those who have not given the subject particular study, England and western Europe largely control the price of grain throughout the world. The United States, Russia, Argentina, India, Australia, etc.—countries which ordinarily produce more than they can consume—pour their surplus into that great industrial territory indicated. England, Germany, the Netherlands, etc., naturally buy where they can get the goods cheapest. With the surplus countries of the world looking to western Europe for an outlet, it is therefore not strange that London, Antwerp and Berlin have much to do with determining the price the Dakota farmer will get for his wheat, or the Kansas farmer for his corn.

#### THE WORLD'S BEST CUSTOMER.

Of the entire world's crops of cereals, only 7 to 10% are exported from the countries where grown, the remainder being consumed at home. But, as most of this surplus, enormous when measured in bushels, looks to England and a few European countries for an outlet, the latter have a very powerful voice in shaping values. This means in effect that

in the long run the grain markets are made very largely in the consuming countries of western Europe, which are enabled in a degree to dictate to the rest of the world what they shall pay; but not always in seasons of general crop shortages.

#### SHAPING INFLUENCES IN GRAIN PRICES.

A number of influences, varying in their power, may always be depended upon to shape grain prices. If there is a crop shortage, either at home or abroad, this tends to strengthen the market, and so with the condition of the growing and maturing crop. If the winter wheat area goes into the ground in rather poor condition, with possibly a decreased acreage, the fact is made the most of; if it is subjected to a hard winter, perhaps with alternate thaw and freeze in February and March, this is conducive to crop scares and higher prices. Then there is a possibility of damage later in the season through drouth, insect pests or early frosts in the autumn prior to full maturity. The position of stocks, both in sight and comprising what is known as the "visible supply," and the indeterminable amount always in farmers' hands, are always closely watched by operators, an apparent partial exhaustion serving as a stimulus, and a plethora as a deterrent. Occasional threatenings of war in Europe, suggestive of disturbances to farming operations there, are usually favorable to higher prices.

The export movement of grain and flour is always closely watched, and if large, favors higher prices. In this same connection, reported short stocks in foreign countries are also helpful. In addition to all these influences named, speculative manipulation of the markets, sometimes developing into positive corners, and conducted by shrewd moneyed operators, who perhaps ignore in a degree real legitimate elements, at times forces prices materially higher.

The converse is true in a general way in influencing the grain markets toward a lower level. Heavy crops at home, either present or prospective, the accumulation of a liberal surplus, the recognition of big farm reserves. So with heavy yields abroad, which either reduce the necessities of importing countries, or perhaps increase the exportable surplus of countries which compete in the world's markets with the United States. When the markets are dull it is an easy matter for bearish speculators to depress prices, through a little vigorous selling; because at such times other operators, even though favorable to higher prices, refuse to offer support, owing to lack of fresh buying incentive.



### HANDLING THE ACTUAL GRAIN.

Thus an incalculable number of influences, some of them purely speculative, are always at work in shaping the price of every bushel of grain marketed day by day. And buyers of the actual property, either for local distribution, for mill, for shipment to distant points or abroad, are always largely dependent upon the speculative end of the market. Grain shipped by farmers and interior dealers to the big distributing centers, such as Chicago, St. Louis, Minneapolis, Toledo, etc., is inspected and graded upon arrival. A certain proportion of it known as "contract grades," i. e., grain good enough to be delivered on speculative contracts, is not immediately offered on the open market, perhaps going to fill sales previously made, or sent to public warehouses for later disposal.

### SELLING BY SAMPLE.

A large part of the grain is sold by sample, even though inspected and graded, seller and buyer meeting on common ground and fixing the price according to the merits of the property. The big trading halls of the exchanges include large numbers of sample tables. Here are displayed carefully drawn samples representing the average of every car of grain, flour, seed or mill stuffs on sale that day. Buyer and seller soon agree upon a price, transactions are quickly closed, payment is made by check, and the business is all done on a strictly cash basis. Farmers in our great grain states as a rule sell direct to dealer at country shipping point, but a large number in the aggregate load their own grain into car and ship to one of the big markets. Here the expenses for selling include such items as freight, inspection, commission, and at times other features, as switching and demurrage charges.

### BEST FOREIGN MARKETS FOR AMERICAN GRAIN.

Liverpool and London are great centers for handling American wheat and corn, vast quantities also going to continental and other foreign ports. The grain is shipped both in bag and in bulk, some of the ocean vessels containing 10,000 tons. The grain is at once unloaded and placed in warehouses built alongside the docks. Most of the American grain is sold to the foreign buyer before being shipped, and at a certain figure which includes freight, insurance charges,

etc., the trading price here being governed very largely by the world's markets also. Wheat sold at \$1 per bushel by the producer will, with railroad freights in America, ocean freights across the Atlantic, and various warehouse and brokerage charges on the English side, increase in price about 15 cents, or in other words will be worth \$1.15 when it reaches the foreign miller. A very large business is done in London in buying and selling full cargoes or shiploads. Speculative trading in grain is followed extensively in Liverpool, Antwerp, Berlin and Paris.

## *Wheat*

### DISTRIBUTING THE WORLD'S WHEAT CROPS.

It might almost be said that there is a wheat harvest for every day in the year, so universal is this greatest of all bread staples. It is grown in every civilized portion of the globe, in both northern and southern hemispheres, particularly in wide stretches of the temperate zones. New Zealand and Chili harvest in January, Argentina, South Africa, Australia and Burmah in November and December. During the intermediate months, work of this character is going on in some portions of the world. The world's wheat crop now approximates 3000 million bushels. Of this the United States produces a larger proportion than any single country and is credited with an annual yield of 20 to 28% of the whole production.

The principal wheat growers of the world are the United States, Russia, France, India, Austria-Hungary, Germany and Argentina, in about the order named. Germany, France and India consume most of the wheat grown within their own borders, the others each year have a liberal surplus, which is marketed, chiefly in western Europe.

The big buyers of wheat are first and foremost, the United Kingdom, which raises a crop of about 55 to 65 million bushels annually, but requires in addition nearly 200 millions more. Much of the continent of Europe is an importer of wheat and flour. France, while an enormous producer of wheat, is liable to require net imports each year of 12 to 20 million bushels, and occasionally as high as 50 millions and upward. Germany needs annual net imports of 25 to 50 million bushels; Belgium, 25 to 45; Holland, 12 to 16; Italy, 20 to 40; Switzerland about 15, and others enough to make a grand total for all importing countries of 350 to

400 million bushels annually. Stated differently, the average weekly wheat and flour requirements of western Europe are equivalent to 7,000,000 bushels and upward.

#### WHEAT MOVEMENT AND MARKET.

From threshing machine and farm granary to flour mills, both at home and abroad, a large part of the surplus wheat crop rests temporarily at what are known as primary markets. These include Chicago, Milwaukee, Minneapolis, Duluth, St. Louis, Toledo, Detroit, Kansas City and Peoria. Most of these cities are points of wheat accumulation, particularly in winter, a time prior to the opening of cheap water navigation, when grain moves rapidly toward tide-water to be available for ocean-going vessels. The leading secondary or seaboard markets are New York, Boston, Philadelphia, Baltimore, New Orleans, Galveston, Newport News and San Francisco. At all these points extensive shipping interests are engaged in forwarding to foreign ports. Exports of wheat and wheat in the form of flour vary greatly according to domestic supply and foreign requirements.

#### THE MODERATE WHEAT CROP OF 1904.

Due to adverse influences, which developed late in the season, the United States wheat crop of 1904 fell far short of the bumper yields of the three preceding seasons. The winter wheat crop was estimated at 327,489,000 bushels, spring 227,224,000, an aggregate of 554,713,000 bushels. This may be compared with 703,500,000 bushels in 1903, 760 in 1902 and 752 millions in 1901.

In many respects the past season was the most remarkable ever experienced in the history of the crop reporting of this country. Disaster and damage pursued the crop from seed time to harvest. The area brought to harvest was very much less than that of the preceding year, this accounting for most of the loss, although the rate of yield for the country at large was only  $11\frac{1}{2}$  bushels to the acre, against nearly 13 bushels the preceding season. Part of the decrease in area occurred in the fall of 1903, when on account of the generally unfavorable conditions attending the preparation of the seed bed, it was not possible to plant the full acreage intended. An additional decrease occurred in the winter wheat belt, especially in the Ohio valley, as the result of winterkilling, and the substituting of spring crops. A fur-

ther decrease was due to the abandonment of fields. In the spring wheat territory the crop was cut down sharply by rust, particularly in the Dakotas and Minnesota.

### FARM STOCKS OF WHEAT FOR 15 YEARS.

[U. S. department of agriculture. Amount on hand March 1.]

Year	Bushels	*Farm price, cents	Year	Bushels	*Farm price, cents
1904.....	133,000,000	69.5	1892.....	171,000,000	83.9
1903.....	164,000,000	63.0	1891.....	143,000,000	83.8
1902.....	174,000,000	62.4	1890.....	156,000,000	69.8
1901.....	128,000,000	61.9	1889.....	115,000,000	92.6
1900.....	159,000,000	58.4	1888.....	132,000,000	68.1
1899.....	198,000,000	58.2	1887.....	130,000,000	68.7
1898.....	121,000,000	80.8	1886.....	117,000,000	77.1
1897.....	88,000,000	71.6	1885.....	169,000,000	64.5
1896.....	123,000,000	50.9	1884.....	119,000,000	91.1
1895.....	127,000,000	49.1	1883.....	143,000,000	88.2
1894.....	137,000,000	53.8	1882.....	113,000,000	119.2
1893.....	153,000,000	62.4			

\*Average price on farms preceding December.

### IMPORTS GRAIN, COTTON AND OTHER CROPS INTO U. S.

[In thousands.]

Year ended June 30	Flour, barrels	Wheat, bushels	Corn, bushels	Oats, bushels	Rye, bushels	Barley, bushels	Cotton†	Flax tow, tons	Hemp tow, tons	Hay, tons	Flaxseed, bushels	Raw tobacco, pounds
1904..	47	7	17	171	33	91	49	10	6	114	213	31,162
1903..	*	1,077	40	137	*	56	75	8	5	293	129	34,016
1902..	*	119	18	25	*	57	99	9	6	48	477	29,429
1901..	*	600	5	21	*	171	47	7	4	143	1,632	26,851
1900..	*	317	2	41	*	190	67	7	3	144	67	20,619
1899..	*	1,871	4	12	*	110	50	6	4	20	82	14,035
1898..	2	2,047	3	9	33	125	53	6	4	4	138	10,477
1897..	2	1,534	6	46	*	1,272	52	9	5	120	105	13,805
1896..	1	2,110	4	48	*	837	55	8	8	303	755	32,883
1895..	2	1,430	17	308	13	2,117	49	7	7	202	4,166	26,668
1894..	*	1,181	2	8	*	791	28	5	2	87	593	19,663
1893..	*	966	2	21	9	1,970	43	7	5	104	112	28,110
1892..	*	2,460	15	20	84	3,146	29	8	5	80	285	21,989
1891..	8	546	2	10	141	5,079	21	6	11	58	1,516	23,061
1890..	1	157	2	21	198	11,333	8	8	37	125	2,391	28,721
1889..	1	131	2	22	*	11,368	8	8	56	105	3,259	20,107
1888..	3	583	37	68	*	10,831	5	6	48	100	1,584	18,600
1887..	1	278	31	87	18	10,356	4	7	33	78	415	17,519

\* Less than 1000. † In millions of pounds.

## WHEAT ACREAGE AND YIELD BY STATES.

## WINTER.

Crop of	Acres*			Av. yield, bu.			Bushels*		
	1904	1903	1902	1904	1903	1902	1904	1903	1902
N. Y. ....	485	539	539	11.5	16.5	16.5	5,578	8,894	8,894
Pa. ....	1,519	1,616	1,600	14.0	15.3	15.0	21,286	24,725	24,000
Tex. ....	1,167	1,215	1,125	11.2	15.5	10.9	13,070	18,833	12,333
Ark. ....	275	345	375	9.5	7.0	8.5	2,613	2,415	3,133
Tenn. ....	830	1,092	1,040	11.7	7.1	7.5	9,711	7,753	7,800
W. Va. ....	356	445	450	10.5	10.0	7.5	3,738	4,450	3,375
Ky. ....	850	1,212	1,200	12.0	8.5	8.5	10,200	10,302	10,200
O. ....	1,650	2,390	2,490	10.6	14.1	16.9	17,490	33,699	42,081
Mich. ....	801	1,027	1,017	8.0	15.8	17.0	6,408	16,229	17,239
Ind. ....	1,805	2,677	2,650	9.5	12.0	16.1	17,148	32,124	42,665
Ill. ....	1,524	1,772	1,772	14.2	10.5	19.0	21,641	18,606	33,663
Wis. ....	108	120	125	14.0	15.8	16.5	1,512	1,886	2,063
Minn. ....	100	105	95	13.0	15.0	11.0	1,300	1,575	1,045
Ia. ....	70	77	83	12.0	15.6	19.0	840	1,201	1,411
Mo. ....	2,650	2,928	3,060	10.8	9.0	19.6	28,620	26,352	59,780
Kan. ....	5,700	6,051	4,034	11.6	15.0	10.6	66,120	90,765	42,760
Neb. ....	1,848	2,168	1,885	11.9	16.3	22.0	21,991	35,338	41,470
Cal. ....	1,500	2,519	2,597	11.0	12.3	14.5	16,500	30,984	37,657
Ore. ....	291	300	323	21.5	20.0	21.0	6,257	6,000	6,525
Wash. ....	343	382	424	27.5	21.2	26.0	9,983	8,098	11,194
Okla. ....	1,359	1,720	1,470	9.2	16.6	11.9	12,503	28,552	17,493
Other ....	3,300	3,672	3,636	10.0	9.5	10.0	33,000	34,884	36,360
Total ...	28,551	34,372	31,980	11.5	12.9	14.5	327,489	443,675	463,151

\*In round thousands of acres and bushels.

## SPRING.

Crop of	Acres*			Av. yield, bu.			Bushels*		
	1904	1903	1902	1904	1903	1902	1904	1903	1902
N. E. ....	10	10	10	20.0	17.0	17.5	200	170	175
Mich. ....	33	33	33	8.5	12.5	16.9	280	418	558
Ill. ....	114	114	114	14.2	10.5	18.5	1,619	1,197	2,109
Wis. ....	591	612	577	10.5	13.9	17.0	6,101	8,507	9,809
Minn. ....	5,909	5,969	6,091	11.2	11.6	12.3	66,181	69,240	74,919
Ia. ....	1,083	1,094	1,152	12.0	12.4	14.9	12,996	13,566	17,165
Kan. ....	50	91	91	11.0	15.0	10.0	550	1,365	910
Neb. ....	827	1,069	1,125	11.6	10.0	14.5	9,593	10,690	16,313
N. D. ....	4,661	4,661	4,545	10.5	11.8	16.3	48,941	55,236	75,084
S. D. ....	4,033	3,878	4,040	8.2	13.8	12.2	33,071	53,516	49,228
Cal. ....	88	92	105	11.0	11.0	13.0	968	1,012	1,365
Ore. ....	690	690	627	19.4	18.8	20.6	13,386	13,008	12,916
Wash. ....	926	916	826	26.1	21.2	26.1	24,143	19,420	21,559
Other ....	724	827	909	12.7	13.5	16.5	9,195	12,486	14,969
Total ...	19,728	20,176	20,245	11.6	12.8	14.6	227,224	259,826	297,169

\*In round thousands of acres and bushels.

AMERICAN AGRICULTURIST  
THE WORLD'S WHEAT CROP.

[In millions of bushels.]

Crop of	1903	1902	1901	1900	1899	1898	1897	1896
<b>Europe.</b>								
France .....	366	352	264	325	360	365	248	340
Russia proper.....	} a 611	608	324	317	312	*332	215	300
Poland .....			13	20	21	21	17	20
Caucasia .....			b 6	56	56	52	30	45
Hungary .....	151	170	126	141	140	118	93	140
Austria .....	48	48	41	40	49	44	32	42
Croatia and Slavonia.....	13	12	9	11	8	11	2	6
Herzegovina and Bosnia...	2	2	2	2	1	2	2	2
Italy .....	179	132	126	116	132	133	88	134
Germany .....	132	143	92	140	140	132	105	110
Spain .....	104	112	116	89	97	*108	100	70
Portugal .....	8	10	10	8	6	8	10	6
Roumania .....	71	73	70	55	24	*56	29	80
Bulgaria .....	} 56	44	27	26	20	*32	25	40
Eastern Roumelia.....			6	5	3	5	3	8
Servia .....	11	12	8	9	11	11	7	14
Turkey-in-Europe .....	20	20	16	16	12	22	16	22
Greece .....	7	3	2	2	2	3	3	5
United Kingdom .....	48	58	53	52	67	74	54	59
Belgium .....	12	13	12	12	13	16	19	19
Holland .....	4	7	4	5	5	6	5	6
Switzerland .....	4	4	4	4	4	4	4	4
Sweden .....	5	3	4	4	4	4	4	5
Denmark .....	4	4	2	3	3	2	5	5
Norway .....	1	1	1	1	1	1	1	1
Cyprus, Malta, etc.....	2	2	2	2	2	2	2	2
<b>Total Europe .....</b>	<b>1865</b>	<b>1833</b>	<b>1390</b>	<b>1461</b>	<b>1493</b>	<b>1564</b>	<b>1119</b>	<b>1485</b>
<b>America.</b>								
United States .....	640	680	720	600	584	712	590	470
Canada .....	80	94	84	44	58	65	60	38
Mexico .....	16	16	16	16	16	16	15	15
Argentina .....	136	104	48	72	101	108	60	25
Chili .....	14	14	8	8	8	11	16	13
Uruguay .....	6	8	4	6	8	2	6	3
<b>Total America .....</b>	<b>892</b>	<b>916</b>	<b>880</b>	<b>746</b>	<b>775</b>	<b>814</b>	<b>747</b>	<b>564</b>
<b>Asia.</b>								
India .....	304	292	228	248	194	232	205	206
Turkey-in-Asia .....	32	28	28	28	32	40	50	40
Persia .....	16	14	15	16	16	17	20	20
Japan .....	16	16	16	16	20	20	14	14
<b>Total Asia .....</b>	<b>368</b>	<b>350</b>	<b>287</b>	<b>308</b>	<b>252</b>	<b>309</b>	<b>289</b>	<b>280</b>

THE WORLD'S WHEAT CROP—Continued.

Crop of	1903	1902	1901	1900	1899	1898	1897	1896
<b>Africa.</b>								
Algeria .....	34	33	23	17	12	27	16	18
Tunis .....	8	8	6	5	4	6	6	6
Egypt .....	8	8	8	9	8	8	6	7
The Cape .....	4	4	4	4	4	4	4	2
<b>Total Africa .....</b>	<b>54</b>	<b>53</b>	<b>41</b>	<b>35</b>	<b>28</b>	<b>45</b>	<b>32</b>	<b>33</b>
<b>Australasia.</b>								
Victoria .....	24	3	15	17	16	19	12	7
South Australia .....	15	6	8	11	8	8	6	3
New Zealand .....	8	7	4	6	8	10	10	7
New South Wales.....	28	1	18	13	8	8	7	7
Tasmania .....	1	1	1	1	1	2	1	1
Other Australia .....	4	1	2	2	1	1	1	1
<b>Total Australasia .....</b>	<b>80</b>	<b>19</b>	<b>48</b>	<b>50</b>	<b>42</b>	<b>48</b>	<b>37</b>	<b>26</b>
<b>World's total .....</b>	<b>3259</b>	<b>3171</b>	<b>2646</b>	<b>2600</b>	<b>2590</b>	<b>2780</b>	<b>2224</b>	<b>2388</b>

a Most recent estimate of central statistical committee, probably an overestimate.

\* Believed to have been overestimated.

N. B.—The crops are those harvested prior to the first September in the years mentioned, excepting in the cases of Australasia, Argentina, Uruguay, The Cape and Chili, which are those of the November-February following. These figures are taken from the Liverpool Corn Trade News, and so far as the United States is concerned, differ somewhat from American Agriculturist's compilations.

WORLD PRODUCT OF GOLD AND SILVER.

[In round millions.]

	Gold		Silver	
	Fine ounces	Value	Fine ounces	Com'l value
1903 .....	15	\$330	170	\$219
1902 .....	14	295	166	215
1901 .....	12	262	173	223
1900 .....	12	254	173	224
1899 .....	14	306	168	217
1898 .....	13	286	169	218
Yearly average, 1893 to 1898.....	8	194	162	210
Yearly average, 1883 to 1893.....	5	114	109	141
Yearly average, 1873 to 1883.....	4	93	69	82
Yearly average, 1860 to 1873.....	6	125	42	54

## 30 YEARS OF WHEAT PRICES AT CHICAGO—NO. 2 CASH.

[In cents per bushel.]

Year	Jan.	May	July	Sept.	Dec.
1904	82@ 94	100@106	95@112	106@118	108@112
1903	70@ 79	70@ 84	75@ 84	74@ 93	80@ 83
1902	74@ 80	72@ 76	71@ 79	70@ 95	72@ 77
1901	71@ 76	70@ 75	68@ 71	68@ 71	73@ 79
1900	61@ 67	63@ 67	74@ 81	72@ 79	69@ 74
1899	66@ 76	68@ 79	68@ 75	69@ 75	64@ 69
1898	89@110	117@185	65@ 88	62@ 68	62@ 70
1897	71@ 94	68@ 98	68@ 80	85@101	88@109
1896	55@ 69	57@ 68	54@ 62	55@ 70	74@ 93
1895	48@ 55	60@ 85	61@ 75	55@ 65	34@ 60
1894	59@ 64	53@ 60	50@ 60	50@ 56	52@ 57
1893	72@ 78	68@ 76	54@ 66	62@ 70	59@ 65
1892	84@ 91	80@ 86	76@ 80	71@ 75	69@ 73
1891	87@ 96	99@108	84@ 95	90@100	89@ 94
1890	74@ 78	89@100	85@ 94	95@105	87@ 93
1889	92@102	77@ 87	76@ 85	75@ 83	76@ 80
1888	75@ 79	80@ 90	79@ 86	90@200	97@106
1887	77@ 80	80@ 89	67@ 71	67@ 72	75@ 80
1886	77@ 85	72@ 79	73@ 79	72@ 77	75@ 80
1885	76@ 82	86@ 91	85@ 91	76@ 87	83@ 89
1884	88@ 96	85@ 95	79@ 85	73@ 80	89@ 76
1883	93@104	107@114	96@103	92@100	94@ 99
1882	125@135	123@129	126@136	97@108	90@ 95
1881	95@100	101@113	108@122	120@141	124@130
1880	114@133	112@119	86@ 97	87@ 96	93@111
1879	81@ 87	90@103	88@105	85@106	122@134
1875	88@ 91	89@107	99@129	105@119	93@104
1873	119@126	122@134	114@146	89@121	105@117

According to records kept by the Chicago Trade Bulletin, wheat touched \$1.61 in August, 1872; \$2.47 in August, 1869; \$2.85 in May, 1867, and sold at a range of 80 cents to \$1.15 in 1863.

The dandelion produces 12,000 seeds per plant; thistle, 65,000; burdock, 43,000, and plantain, 44,000.

One pound of sheep's wool will produce one yard of best cloth.

A silk thread is three times as strong as one of flax the same thickness.

Beets yield 12 to 13% of their weight in sugar.

In writing to the advertiser say: "I saw your adv in one of the old reliable American Agriculturist weeklies."



## VISIBLE SUPPLY OF WHEAT IN U. S. AND CANADA.

[In millions of bushels, first week in each month.]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1904	38	39	34	32	30	20	14	13	13	18	28	37
1903	50	48	47	42	33	23	16	13	13	19	25	32
1902	59	58	54	48	38	26	19	22	21	26	32	46
1901	61	59	57	54	47	37	30	30	28	37	41	55
1900	58	54	54	54	50	45	47	48	50	55	60	62
1899	27	28	29	30	27	26	34	38	35	42	51	56
1898	39	36	33	30	23	22	15	9	7	11	17	24
1897	55	48	43	39	34	24	18	18	15	21	29	35
1896	70	66	63	60	56	50	47	46	46	50	59	56
1895	88	83	79	74	62	52	45	39	35	42	53	64
1894	80	80	76	71	65	59	54	60	67	71	80	85
1893	81	81	79	78	73	71	62	59	57	63	71	78
1892	46	43	42	41	38	30	24	24	36	48	66	73
1891	26	24	23	22	21	16	13	17	20	28	36	42
1890	34	31	29	27	23	22	20	18	18	17	21	25
1889	38	35	32	29	25	20	14	13	14	19	28	33
1888	44	42	38	34	32	26	24	22	29	32	33	36
1887	63	62	58	52	47	43	34	33	31	31	34	40
1886	58	55	52	49	43	35	28	35	43	51	56	60
1885	48	48	48	48	44	41	41	40	43	45	52	56
1884	36	33	35	32	24	19	15	14	18	26	36	43
1883	21	22	23	23	21	20	19	18	21	27	31	33
1882	18	18	17	12	11	9	10	14	12	13	16	20
1881	29	28	26	21	19	15	16	17	20	19	21	20

**Corn**

So enormous is the annual corn crop of the United States that the average person loses sight of the relatively small production in the outside world. Argentina and Austria grow considerable quantities, but aside from the countries named the production of maize is small. The world's crop on a full year will approximate 3,000,000,000 bushels, and of this five-sixths will be found in the United States. During the past two or three years, the prominence of Argentina as a corn grower has attracted much attention, especially as most of the crop produced in that country is surplus which is available for Europe, and competing directly with our own.

But all in all, our farmers practically enjoy a monopoly in this great cereal, producing something like four-fifths of the world's crop. Austria-Hungary grows considerable quantities, and so with other countries in eastern Europe,

Italy, Egypt, etc. While Canada is important as a grower of wheat, oats, barley, etc., little advance has been made in corn culture in recent years, owing to the short season for crop growth.

### WORLD-WIDE DISTRIBUTION.

While the production of corn in the United States greatly exceeds that of all other countries put together, the proportion seeking a foreign outlet is comparatively small. This is due to the fact that the crop is very largely consumed in the countries where grown, and also the necessity of the surplus states providing needed requirements for consumptive purposes in many portions of the east and south. In an occasional year when our crop is large and price low, we export 200,000,000 bushels and upward, but this is only 8 or 10% of the crop. When prices are comparatively high, as during the past two years, foreigners seem to be able to get along without very much American corn, and our exports fall off to small proportions. This will be shown in tables elsewhere, indicating the foreign movement of our principal farm crops. Western Europe continues the chiefest buyer of our corn surplus.

But the amount available for foreign markets is relatively very much less than in wheat, owing to the heavy feeding of live stock. In the mechanic arts corn is put to various uses not dreamed of years ago. The glucose industry has developed rapidly, requiring large quantities of corn, and there is here a resultant valuable by-product suitable for live stock rations. Corn oil in manufactures is coming into some prominence. Progressive millers are constantly introducing new cereal foods into which corn largely enters, and lastly, the pith and fiber of cornstalks are being transformed into valuable material.

### THE CORN CROP OF THE UNITED STATES.

As already noted, this is far and away greater than the corn crop of any other country. Furthermore, our domestic crop of corn greatly exceeds the production in other cereals, wheat, oats, etc., both in tonnage and value. The area given to corn has increased slightly year by year, until a round 100,000,000 acres given over to this crop does not seem so very remote. Taking the country at large, the average annual rate of yield per acre is 23 to 27 bushels, and in excep-

tionally good years a little more. The estimated rate of yield in 1904 was 27.7 bushels. Seven states in the middle and central west, known as the great surplus states, show aggregate yields very much ahead of other parts of the country. These include Iowa, Nebraska, Kansas, Missouri, Illinois, Indiana and Ohio. Among other very important corn states are Kentucky, Tennessee, Texas, etc., and it is a noteworthy fact that the corn belt in the last few years has crept north rapidly, and good crops are now secured in considerable areas in Minnesota and the Dakotas, Wisconsin, Michigan, etc., where a generation ago such would have been thought impossible.

#### VISIBLE SUPPLY OF CORN IN U. S. AND CANADA.

[In round-millions of bushels, first week of month named.]

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
1904	6	7	9	10	8	4	6	6	4	6	2	—
1903	7	8	11	10	6	5	7	7	6	9	7	5
1902	12	12	10	9	6	4	6	7	3	3	3	4
1901	11	15	20	22	19	16	14	13	13	14	13	11
1900	13	15	20	23	18	12	11	12	5	8	8	9
1899	21	28	33	33	22	13	14	10	7	12	13	12
1898	38	40	41	43	27	21	23	18	17	21	24	20
1897	20	23	26	25	17	14	16	17	31	37	45	40
1896	6	12	13	17	11	10	9	12	14	14	19	17
1895	11	13	13	13	9	11	9	5	5	5	5	6
1894	10	15	19	17	10	8	5	4	3	4	3	5
1893	11	14	16	15	10	8	8	7	6	9	8	7
1892	7	7	10	12	6	4	8	7	8	11	13	11
1891	3	3	3	3	3	6	4	4	7	8	3	2
1890	9	12	14	21	13	14	14	12	8	9	7	2
1889	10	13	16	17	12	12	9	7	12	12	8	6
1888	6	7	9	9	8	9	11	8	8	10	11	7
1887	14	16	16	19	19	13	10	8	6	7	8	5
1886	8	7	11	16	12	8	9	9	12	13	13	11
1885	4	5	6	9	8	5	5	4	5	5	5	4
1884	10	13	14	17	12	8	7	4	4	7	5	5
1883	9	11	14	18	17	14	13	11	11	14	10	9
1882	17	18	14	10	8	10	7	6	6	7	4	6
1881	16	17	16	14	13	10	15	16	23	27	26	19

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## CORN ACREAGE IN U. S. AND YIELD BY STATES.

[Total acres and total bushels in thousands.]

Crop of	Acres			Av. yield, bu.			Bushels		
	1904	1908	1902	1904	1908	1902	1904	1908	1902
Ill. ....	9,846	9,457	9,650	37.5	31.2	38.0	361,725	295,068	366,700
Ia. ....	8,796	8,089	8,275	37.2	39.1	35.5	327,174	234,808	329,263
Neb. ....	7,554	7,263	7,411	34.8	28.8	34.5	262,879	209,174	255,680
Mo. ....	5,844	6,025	6,925	25.9	29.0	36.8	151,360	174,725	254,840
Kan. ....	6,540	7,426	7,735	22.6	26.3	28.5	147,804	195,304	220,448
Ind. ....	4,729	4,504	4,560	33.2	34.3	37.5	157,003	154,487	170,625
Ohio ....	3,865	3,752	3,950	32.7	30.0	36.5	126,386	112,560	144,175
Ky. ....	3,346	3,313	3,415	27.7	26.9	26.0	92,684	89,120	88,790
Tenn. ....	3,355	3,322	3,425	27.0	26.7	22.8	90,585	88,697	78,090
Tex. ....	5,676	5,565	5,351	28.1	27.0	13.5	159,496	150,255	72,239
Ark. ....	2,559	2,485	2,485	21.5	18.3	21.3	55,019	45,476	52,931
Wis. ....	1,777	1,742	1,725	33.1	28.6	29.1	58,819	49,821	50,198
Mich. ....	1,484	1,530	1,577	31.0	35.4	30.0	46,004	54,162	47,310
Minn. ....	1,686	1,696	1,708	30.0	28.9	27.3	50,580	46,413	46,628
Pa. ....	1,461	1,447	1,477	32.0	32.0	30.0	46,752	46,304	44,310
Okla. ....	1,717	1,455	1,500	28.5	18.1	29.2	45,501	26,336	43,800
S. D. ....	1,503	1,445	1,505	23.8	29.6	13.0	35,771	42,762	19,565
W. Va. ....	776	768	776	26.0	25.0	25.2	20,176	19,200	19,555
N. Y. ....	670	657	670	30.0	24.5	24.0	20,100	16,097	16,080
Cal. ....	49	51	56	30.0	30.2	28.0	1,470	1,540	1,568
N. D. ....	60	66	65	19.0	18.3	22.8	1,140	1,208	1,482
Ore. ....	20	20	20	26.0	24.0	23.0	520	480	460
Wash. ....	11	11	10	25.0	25.0	25.0	275	275	250
Other .....	19,665	19,470	19,277	16.0	15.0	12.0	314,640	292,050	231,324
<b>Total</b> .....	<b>92,788</b>	<b>91,449</b>	<b>94,448</b>	<b>27.7</b>	<b>26.0</b>	<b>27.1</b>	<b>2,573,883</b>	<b>2,346,312</b>	<b>2,556,311</b>

## WORLD'S CORN CROP, MILLIONS OF BUSHEL'S.

[Compiled chiefly from Corn Trade Year Book.]

Crop of	1908	1902	1901	1900	1899	1898	Avg.	% of total
Argentina .....	104	72	69	60	72	56	72	3.8
Austria-Hungary ...	160	123	145	162	145	164	149	5.8
Bulgaria .....	24	16	30	36	20	38	27	0.8
Canada .....	28	20	25	28	22	24	24	1.0
Egypt .....	24	20	30	20	30	32	26	0.8
Italy .....	86	64	86	83	89	80	81	3.1
Roumania .....	77	60	112	85	28	102	77	2.8
Russia .....	47	44	66	34	31	48	45	1.7
Uruguay .....	8	7	7	3	6	4	6	0.2
United States .....	2176	2448	1419	2188	2078	1924	2039	79.5
<b>Total</b> .....	<b>2734</b>	<b>2874</b>	<b>2084</b>	<b>2573</b>	<b>2521</b>	<b>2472</b>	<b>2546</b>	

## CORN PRICES AT CHICAGO—NO. 2 CASH.

[In cents per bushel.]

Year	Jan.	May	July	Sept.	Dec.	Year	Jan.	May	July	Sept.	Dec.
1904.	.42-48	47-50	47-50	51-55	46-48	1888.	.47-50	54-60	45-51	40-46	33-36
1903.	.44-48	44-46	49-53	45-53	42-44	1887.	.35-38	37-39	34-38	40-44	46-52
1902.	.56-64	59-65	56-88	57-62	44-57	1886.	.36-37	34-37	34-45	36-41	35-38
1901.	.36-38	43-58	43-58	54-60	62-67	1885.	.34-40	44-49	45-48	40-45	36-43
1900.	.30-32	36-40	38-45	39-43	36-40	1884.	.51-58	52-57	49-57	51-87	34-40
1899.	.35-38	32-35	31-35	31-35	30-31	1883.	.49-61	52-57	47-63	47-53	54-63
1898.	.26-28	33-37	32-35	29-31	33-38	1882.	.60-62	68-77	74-83	57-75	48-60
1897.	.21-23	23-26	24-29	27-32	25-27	1881.	.36-38	41-45	45-51	60-74	58-64
1896.	.25-28	27-30	24-28	19-22	22-24	1880.	.36-41	36-38	33-38	39-41	35-42
1895.	.40-46	46-55	41-47	31-36	24-27	1879.	.29-31	33-36	34-37	32-39	39-43
1894.	.34-36	36-39	40-46	48-58	44-48	1878.	.38-44	34-41	35-41	34-38	29-32
1893.	.40-45	39-45	35-42	37-43	34-37	1877.	.41-44	43-58	46-51	41-46	41-46
1892.	.37-39	40-100	47-52	43-49	39-43	1876.	.40-45	44-49	42-48	43-48	43-47
1891.	.47-50	55-70	57-66	48-68	39-59	1875.	.64-70	60-76	67-77	54-62	45-54
1900.	.28-30	32-35	33-47	44-50	47-53	1874.	.49-61	55-66	58-80	66-86	71-85
1889.	.33-36	33-36	34-37	30-34	29-35	1873.	.30-31	37-43	32-34	32-44	44-54

## ENORMOUS HOME CONSUMPTION OF CORN.

The draft made upon our splendid corn crop, particularly in the stock feeding states, has been alluded to elsewhere. Almost equally important are the necessities of the older middle and eastern states, where the crop of field corn is small, and where the requirements of dairy farmers are heavy. Low rates of freight from the producing states to the seaboard, especially during the period of navigation, are great aids to the distribution of the surplus, enormous quantities of corn being carried every summer from Chicago to Buffalo at a rate as low as 1 cent per bushel. Leading export points are New Orleans, Newport News, Baltimore, Philadelphia, New York and Boston.

The up-to-date farmer does not need to be told that corn as a fodder crop has never been so much appreciated as now. A generation ago it was the custom in the great central western states to husk corn standing in the fields, and then turn in stock cattle to utilize so much of the stalks and imperfect ears as pleased their fancy, trampling on the remainder, perhaps burning over the dry stalks and stubble prior to plowing another season. In fact, this slipshod method is still followed to some extent in a few states, but the exceptional neglect proves the rule of husbanding this valuable plant. The silo and the shredder are working a veritable revolution in the economical utilization of corn.

This is nowhere more true than in the older middle and eastern states, where silage corn is very largely grown, with no thought of permitting it to mature in the field to a point where husking is in order.

## Oats

Something like 3,000,000,000 bushels oats are grown each year in the northern hemisphere, this crop being given little consideration in Australasia, South Africa and South America. The United States is the largest producer, but Russia is a close second, these two countries making up practically half the oats tonnage of the world. Next in importance follow Germany, France, Austria-Hungary, the United Kingdom and Canada, in about the order named. This crop is a prime favorite in all northern latitudes, and in foreign countries as well as our own is regarded a sure one.

### A BILLION BUSHEL PRODUCER.

In a full year the United States crop approximates 1,000,000,000 bushels, exceeding that occasionally, last year falling slightly under the amount named. The area devoted to oats is something like 30,000,000 acres. While this is materially less than the wheat acreage, the larger rate of yield to the acre, 25 to 40 bushels, results here in a measured bulk very much greater than that of wheat. Considerable attention is given this crop in every state, although the yield in the south is relatively small. In recent years, Iowa has produced more than any other one state, followed closely by Minnesota and Illinois, while other leaders include Wisconsin, New York, Pennsylvania, Indiana, Ohio, Michigan, Nebraska, etc.

### THE SPLENDID OATS CROP OF 1904.

The season was in every way strikingly favorable for the development of large heads and a heavy grain, the only exception to this being the fact that at the time of seeding an excess of moisture interfered to some extent with the preparation of the seedbed. The average rate of yield of oats was 33 bushels per acre, which on a basis of the estimated

acreage makes a total crop of 973,135,000 bushels. In 1903, the crop upon practically the same acreage was estimated at 823,138,000 bushels, showing an increased production last year without any increase in the acreage, of 150,000,000 bushels. The fact that the rate of yield in 1904 in the greater portion of the producing district was materially larger than the condition reported would have indicated when figured on the basis of past experience, furnishes evidence that this crop is now receiving more attention in the way of careful preparation and seed selection than ever before.

## OATS ACREAGE AND YIELD BY STATES.

[In round thousands.]

Crop of	Acres			Bus. p. acre			Bushels*		
	1904	1903	1902	1904	1903	1902	1904	1903	1902
Iowa .....	4,040	4,165	4,250	34.2	25.6	34.1	138	107	145
Illinois .....	3,925	4,132	4,350	30.0	25.3	35.4	118	105	154
Wisconsin .....	2,435	2,435	2,435	34.0	30.0	39.4	83	78	96
Minnesota .....	2,366	2,320	2,275	35.0	32.7	40.0	130	76	91
Nebraska .....	2,013	1,964	1,896	30.0	30.2	34.6	60	59	66
New York .....	1,314	1,301	1,370	35.5	35.5	33.5	47	46	46
Pennsylvania ..	1,199	1,187	1,250	34.3	32.0	31.2	41	38	39
Ohio .....	1,208	1,162	1,210	40.0	28.1	39.3	48	33	48
Indiana .....	1,294	1,269	1,410	32.1	25.6	34.6	42	32	49
Michigan .....	1,118	1,065	1,075	32.0	29.7	37.1	36	32	40
Texas .....	915	906	915	31.0	34.8	29.3	28	32	27
South Dakota ..	813	774	737	35.0	35.0	34.6	28	27	26
Kansas .....	971	971	971	23.0	25.5	30.0	22	25	29
North Dakota ..	879	837	797	38.0	26.0	40.5	33	22	32
Missouri .....	844	888	935	22.4	22.4	32.0	19	20	30
Oregon .....	277	288	285	30.0	33.6	33.0	8	10	9
Washington ....	149	158	155	40.0	45.0	48.3	6	7	7
Oklahoma .....	295	314	285	24.0	21.6	47.3	7	7	13
Kentucky .....	273	268	285	26.6	21.4	24.9	7	6	7
Arkansas .....	256	270	275	21.4	17.5	18.3	5	5	5
California .....	170	167	165	28.5	26.6	33.4	5	4	6
Tennessee .....	195	209	220	25.2	18.8	19.1	5	4	4
West Virginia..	86	86	90	27.0	24.5	23.0	2	2	2
Other .....	2,459	2,435	2,510	21.5	20.0	23.0	53	49	58
Total .....	29,494	29,561	30,146	33.0	27.8	34.1	973	823	1028

\*In round millions of bushels.

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## OATS PRICES AT CHICAGO—NO. 2 CASH.

[In cents per bushel.]

Year	Jan.	May	July	Sept.	Dec.	Year	Jan.	May	July	Sept.	Dec.
1904.	36-42	39-45	38-45	29-34	29-31	1889.	24-25	21-24	22-23	19-20	20-21
1903.	31-34	33-38	33-45	35-38	33-35	1888.	30-32	32-38	28-33	23-25	25-27
1902.	38-46	41-49	30-56	26-27	29-32	1837.	26-27	25-28	24-27	23-27	28-31
1901.	23-24	28-31	27-30	33-36	42-43	1886.	23-26	26-30	27-32	24-26	25-27
1900.	22-23	21-24	21-24	21-22	22-23	1885.	25-29	31-26	26-33	24-27	27-29
1899.	26-28	24-28	20-25	21-23	22-23	1884.	31-34	31-34	28-33	24-26	23-26
1898.	21-24	26-32	21-26	20-22	26-28	1883.	35-40	38-43	27-37	25-29	30-36
1897.	16-17	17-19	17-18	19-21	21-24	1882.	42-45	48-55	52-62	30-36	34-42
1896.	17-19	18-20	15-19	14-17	16-19	1881.	30-32	36-40	37-45	36-46	43-48
1895.	27-29	27-31	22-25	18-21	16-18	1880.	32-36	29-34	23-26	27-35	29-33
1894.	26-29	32-36	29-41	27-31	28-29	1879.	19-20	24-31	25-37	21-27	33-37
1893.	30-32	29-32	22-30	23-29	27-29	1875.	52-53	57-65	48-56	34-40	29-31
1892.	28-30	28-34	30-34	31-34	29-31	1873.	24-26	30-34	27-30	26-31	34-41
1891.	41-44	45-54	27-45	26-30	31-34	1869.	45-50	56-63	57-71	42-46	40-45
1890.	20-21	24-30	27-35	44-51	41-44						

*Rye*

The domestic crop of rye forms a very insignificant portion of the world's production. The last named in a given year approximates 1300 million bushels. The United States produces something like 30,000,000 bushels, or practically 2%. For many years Russia has been the leading rye grower of the world, making up about half the total crop. Germany follows with something like 20% of the world's supply of rye, while Austria-Hungary and France each grows more than the United States. Rye continues the popular bread-stuff of the country people of central and eastern Europe, and this accounts for the tremendous breadth given this cereal from the Rhine to the Siberian border. In Russia, the rye crop is substantially of as much value and importance as wheat, and is grown in a good many provinces.

## THE UNITED STATES RYE CROP.

No advance has been made in the attention given rye in recent years. The acreage is practically stationary, somewhere around 2,000,000 acres, the crop a fairly sure one, rate of yield varying not far from 15 bushels to the acre, one year with another. The small annual production is more than ample for domestic requirements, and under the slightest encouragement a considerable fraction of it would go abroad. Exports are generally small and unimportant. The domestic



demand for rye as a breadstuff is meager, while a considerable portion of the crop goes to distillers. In the great market places, rye, always a sluggish affair, usually shows a close sympathy with wheat, so far as values are concerned.

## MONTHLY RANGE OF CASH (NO. 2) RYE AT CHICAGO.

[In cents per bushel.]

Year	Jan.	May	July	Sept.	Dec.	Year	Jan.	May	July	Sept.	Dec.
1904.	51-57	69-78	63-75	69-75	*81-83	1895.	.48-51	62-67	46-56	37-41	32-36
1903.	47-48	48-50	49-52	53-60	50-52	1894.	.44-46	44-49	40-48	46-48	48-50
1902.	58-59	57-58	52-57	49-50	48-49	1893.	.50-58	51-60	43-51	40-47	45-48
1901.	56-67	54-58	52-61	49-51	48-50	1892.	.78-87	70-79	65-75	55-58	46-52
1900.	47-49	51-54	47-57	52-56	59-66	1891.	.61-72	83-92	66-77	82-91	86-92
1899.	50-52	53-56	50-58	50-53	45-49	1890.	.43-45	49-54	47-54	58-63	64-69
1898.	53-59	42-48	51-60	54-58	49-52	1888.	.61-64	63-70	44-53	50-55	50-52
1897.	36-38	32-36	33-40	47-56	45-48	1885.	.52-64	68-73	57-61	56-60	58-61
1896.	32-41	33-37	29-32	30-37	37-43	1882.	.96-96	77-83	66-75	57-67	57-59

\*November price.

The rye crop received a little more attention during the decade from 1880 to 1890 than at any time before or since, but the difference was not sufficiently marked to indicate any radical change in cropping. The fact that rye is the principal bread cereal for a large proportion of the population of the world makes its neglect in American agriculture a striking indication of international differences in dietic tastes. While the Russian peasant and small German farmer subsist almost entirely upon this grain, there is no population in our country which regards it as its principal bread grain; in fact, about the only use which is made of rye for human consumption as food in this country is its occasional appearance upon the table as a variation from the regular bread grain.

The stationary character of rye production during the last two decades, when taken in connection with the rapid increase in population and consuming ability, indicates that the per capita supply of rye is steadily decreasing. The bulk of the crop now grown is used in the production of distilled spirits and for feeding purposes. The demand for grain for purposes of distillation is moderately uniform, but as it has no special advantages over other forms of grain for feeding purposes, there is little probability that the crop will ever become one of importance to American farmers.

The crop yield this year is slightly below the normal, but was larger than expected early in the season. The rate of yield was comparatively uniform in the districts of prin-

cipal production. The average for the country was 15.1 bushels, making a total crop this year of 30,286,000 bushels, grown upon 1,991,000 acres.

#### ACREAGE AND PRODUCTION OF RYE, 1904.

Crop of	Acres	Bus. p. acre	Bushels
New York .....	158,000	15.1	2,356,000
Pennsylvania .....	358,000	16.0	5,728,000
Texas .....	4,000	13.5	54,000
Arkansas .....	3,000	10.0	30,000
Tennessee .....	14,000	12.1	169,000
West Virginia .....	14,000	12.7	178,000
Kentucky .....	16,000	13.2	211,000
Ohio .....	17,000	16.5	281,000
Michigan .....	161,000	13.0	2,093,000
Indiana .....	35,000	14.9	522,000
Illinois .....	73,000	17.2	1,256,000
Wisconsin .....	354,000	17.0	6,018,000
Minnesota .....	111,000	17.1	1,899,000
Iowa .....	76,000	17.7	1,345,000
Missouri .....	21,000	14.0	294,000
Kansas .....	77,000	12.5	963,000
Nebraska .....	158,000	16.0	2,528,000
North Dakota .....	31,000	19.1	592,000
South Dakota .....	38,000	16.0	608,000
California .....	68,000	8.0	544,000
Oregon .....	11,000	15.2	167,000
Washington .....	3,000	20.0	60,000
Oklahoma .....	4,000	10.0	40,000
Other .....	188,000	12.5	2,350,000
Total .....	1,991,000	15.1	30,286,000
1903 .....	2,061,000	15.4	31,842,000

### Barley

Northern and eastern Europe have long been foremost in the barley producing countries of the world. The situation does not change materially from year to year, although the notable and important feature for the American farmer is the marked increase given this cereal in the United States. We still stand no better than fifth, however, among the producing countries of the world. Russia is the largest barley grower, with a product at least two and one-half times greater than ours, while Austria and Germany each probably produces slightly more than the annual crop of the United States. Some of the Russian crop finds lodgment in Germany, a heavy consumer as well as producer. Austria-

Hungary grows much barley, and the cereal is also popular in such northern portions of Europe as Scandinavia, France and the United Kingdom.

Russia and southeastern Europe, as above noted, are the chief exporting countries, although the United States, particularly the Pacific coast, ships some barley each year and Canada also has a small surplus. The latter would find a market in the United States but for the tariff barrier.

### SHARP INCREASE IN THE DOMESTIC BARLEY CROP.

Not a popular cereal in the same sense that are wheat, corn and oats, barley has its place in the list of domestic cereals, and in recent years has been shown greatly increased favor. It is still, however, largely localized in a few such states as Minnesota, California, North Dakota, Iowa and Wisconsin, in about the order named in importance. The area given over to this crop now considerably exceeds 5,000,000 acres, and the tonnage is very substantial in character.

It has been found that barley makes an exceedingly good complementary crop for spring wheat in the northwest, and the natural tendency to diversify production wherever it can be done has resulted in a tremendous increase in barley acreage in the territory which a few years ago was devoted exclusively to spring wheat. In the Red river valley, for example, where until five years ago there was almost nothing except wheat, there is now a large and constantly increasing percentage of the land devoted to the barley crop. The results both in yield and in financial return have proved so satisfactory that barley may now be regarded as a permanent secondary crop in this important section of the country. The great demand for barley in this country is for brewing purposes, and this industry furnishes an outlet for a greater part of the high grade produced at relatively good figures. There is a growing use, however, of the crop for feeding purposes, and a considerable proportion, especially of the lower grades, is thus disposed of.

### THE BARLEY CROP OF 1904

was one of rather more than an average in rate of yield, with a production fairly uniform in all states of importance. The season was favorable, the quality of the crop reasonably satisfactory.

## DISTRIBUTION OF BARLEY CROP OF 1904 BY STATES.

Crop of	Acres	Bus. p. acre	Bushels
New York .....	110,000	27.0	2,970,000
Pennsylvania .....	9,000	23.0	207,000
Texas .....	5,000	30.0	150,000
Arkansas .....	1,000	21.0	21,000
Tennessee .....	2,000	22.5	45,000
West Virginia .....	1,000	25.0	25,000
Kentucky .....	1,000	21.1	21,000
Ohio .....	33,000	28.0	924,000
Michigan .....	45,000	24.6	1,107,000
Indiana .....	11,000	28.6	315,000
Illinois .....	23,000	27.5	633,000
Wisconsin .....	507,000	31.0	15,717,000
Minnesota .....	1,121,000	28.7	32,173,000
Iowa .....	595,000	28.0	16,660,000
Missouri .....	2,000	21.1	42,000
Kansas .....	145,000	20.5	2,973,000
Nebraska .....	104,000	28.0	2,912,000
North Dakota .....	606,000	27.9	16,907,000
South Dakota .....	357,000	27.0	9,639,000
California .....	1,365,000	21.8	29,757,000
Oregon .....	74,000	27.0	1,998,000
Washington .....	165,000	35.0	5,775,000
Oklahoma .....	17,000	30.0	510,000
Other .....	135,000	22.0	2,970,000
<b>Totals .....</b>	<b>5,434,000</b>	<b>26.6</b>	<b>144,451,000</b>
1903 .....	4,942,000	26.3	139,145,000

## RANGE OF BARLEY PRICES AT CHICAGO.

[In cents per bushel.]

Year	January		May		September		December	
	Malt'g	Feed	Malt'g	Feed	Malt'g	Feed	Malt'g	Feed
1904	45@62	35@44	50@60	32@46	45@58	35@43	42@55	35@40
1903	52@64	31@44	38@54	23@38	47@62	31@41	44@62	28@42
1902	50@66	36@45	60@72	37@50	51@63	30@42	50@62	32@41
1901	49@64	31@43	45@59	23@38	51@67	33@47	51@65	34@43
1900	41@53	22@31	32@45	19@28	42@57	24@38	53@64	35@42
1899	42@55	23@34	41@52	20@31	33@46	18@27	38@51	21@32
1898	31@43	15@25	41@54	23@35	32@46	19@29	39@52	22@23
1897	30@36	23@26	30@40	23@27	32@40	26@28	32@45	25@28
1896	30@40	22@28	31@40	25@30	30@36	20@28	33@38	22@25
1895	51@56	30@40	50@52	46@50	40@45	25@35	33@40	22@27
1894	43@60	35@40	53@60	45@50	53@57	48@52	35@55	46@50
1893	55@70	30@40	53@66	38@50	42@56	32@40	40@55	30@40
1892	52@63	31@40	48@60	30@45	53@68	35@45	55@70	33@46
1891	60@75	50@55	70@77	65@68	46@67	30@40	47@60	35@40

## Cotton

Probably never before in commercial history has Europe made such strenuous efforts to secure release from the thralldom of the United States in regard to raw cotton supplies, as at present. England is taking the initiative in this work, but France and Germany are striving unceasingly to encourage and develop cotton culture on an extensive scale in their various colonies. Efforts are being made in every civilized part of the globe where climatic conditions are at all favorable to build up the cotton growing industry, suggesting increased competition in the years to come. This great staple is cultivated mostly in the district between 20 degrees and 35 degrees north latitude. Within these lines lie the cotton sections of North America, Egypt, North Africa and Asia. South of the equator, cotton is grown for commercial purposes in Brazil and to a limited extent in Australia, South Africa and the islands of the Pacific.

With the ushering in of the 19th century, or more particularly the decade 1791-1801, the invention of the cotton gin gave an impetus to the production in the United States. Within 20 years this country had assumed the position it has since maintained, that of the leading producer of the world. Figures in accompanying tables afford a good idea of the advance in cotton growing in the United States during the past decade.

### UNITED STATES COTTON CROP BY STATES.

[Last three figures (000's) omitted.]

[From the New York Commercial and Financial Chronicle.]

Crop of	1894 Bales	1903 Bales	1902 Bales	1901 Bales	1900 Bales	1899 Bales	1898 Bales	1895 Bales
Texas .....	2,992	2,514	2,240	2,203	2,236	1,796	1,487	1,117
Louisiana .....	918	2,008	2,317	2,273	2,456	1,867	2,128	1,810
Ga. and Fla. ....	1,842	1,413	1,576	1,509	1,866	1,358	1,109	983
Virginia .....	—	466	476	455	415	418	714	495
North Carolina. .	609	376	386	326	310	318	281	199
Alabama .....	1,279	202	217	157	124	203	291	200
South Carolina. .	1,100	159	210	278	238	266	476	372
Tennessee, etc. .	3,422	2,985	3,338	3,501	3,282	3,217	2,225	2,086
Total .....	12,162	10,123	10,768	10,701	10,425	9,440	8,711	7,162

In connection with the above showing, the following table carries the United States crop review back to 1880:

Year	Bales	Year	Bales
1894.....	9,901,000	1886.....	6,506,000
1893.....	7,550,000	1885.....	6,576,000
1892.....	6,700,000	1884.....	5,706,000
1891.....	9,035,000	1883.....	5,713,000
1890.....	8,653,000	1882.....	6,950,000
1889.....	7,311,000	1881.....	5,456,000
1888.....	6,938,000	1880.....	6,806,000
1887.....	7,046,000		

#### IMPORTS COTTON INTO THE U. S. AND FOREIGN TRADE IN COTTON MANUFACTURES.

Year	Imports cotton, pounds	Imports cotton manufactures	Exports manufactures
1903-4 .....	48,840,590	\$49,524,246	\$22,403,713
1902-3 .....	74,874,426	52,462,684	32,216,304
1901-2 .....	98,715,680	44,460,126	32,108,362
1900-1 .....	46,631,283	40,246,935	20,272,418
1899-0 .....	67,398,521	41,296,242	24,003,087
1898-9 .....	50,153,153	32,054,434	23,766,915
1897-8 .....	52,660,363	28,367,300	17,024,092
1896-7 .....	51,898,926	34,429,363	21,037,678
1895-6 .....	55,350,520	32,437,504	16,837,396
1894-5 .....	49,332,022	33,196,625	13,789,810
1893-4 .....	27,705,949	22,346,557	14,340,886
1892-3 .....	43,367,952	33,560,293	11,809,355
1891-2 .....	28,663,769	28,323,841	13,266,277
1890-1 .....	20,908,817	29,712,624	13,604,857
1889-0 .....	8,606,049	29,918,055	9,999,277
1888-9 .....	7,973,039	26,805,942	10,212,644

#### UNITED STATES COTTON CROP OF 1904-5.

The opening months of the year 1904 saw substantial advances in the cotton market, prices at New York for middling upland soared above 16 cents per pound. In view of this fact it is not surprising that the acreage devoted to cotton in the south last summer should have been the greatest on record. The area under that staple in the United States for 1904 aggregated 31,730,000 acres, an increase of 10% over 1903. While final estimates for the resultant crop are not yet available, the preliminary government report placed the yield at 12,162,000 bales, the greatest ever known.

There was the old cry that high prices seriously disturbed operators and spinners, both in this country and in

Europe. Manufacturers claimed they could not buy cotton at the high prices and profitably convert it into finished goods. With the demand on the part of the world's consumers rather sluggish at the high prices, the tendency up to last fall was toward reduction in the output of mills, all the way from northern New England to the south Atlantic states.

Planters throughout the entire United States are taking a keen interest in the efforts of the department of agriculture at Washington to destroy that pernicious pest, the Mexican boll weevil. The insect is still ravaging certain districts of Texas and a small part of Louisiana. Last year the department imported an ant from Guatemala which it is hoped will in time not only check the further spread of the cotton boll weevil throughout the southwest, but will eliminate the pest altogether. However, it will take another season to fully demonstrate the possibilities of this weevil destroyer.

Price of middling upland cotton at New York at the opening of several months for a number of years, in cents per pound:

Year	Jan.	Mar.	May	July	Sept.	Oct.	Nov.	Dec.
1904	.....13	16 1-4	13 9-10	10 4-5	11 1-10	10 3-5	10 1-10	8
1903	..... 9	10	10 3-4	12 3-4	12 1-2	10	11 1-16	12 1-2
1902	..... 8 5-16	8 13-16	9 11-16	9 1-4	9	8	8 13-20	8 11-20
1901	.....10 1-8	9 1-4	8 5-16	8 9-16	8 9-16	8 15-16	7 15-16	8
1900	..... 7 3-4	9 5-16	9 13-16	10 1-4	9 7-8	10 7-8	9 5-8	10 1-8
1899	..... 5 7-8	6 9-16	6 1-8	6 3-16	6 1-4	7 3-16	7 3-8	7 13-16
1898	..... 5 15-16	6 5-16	6 5-16	6 3-16	5 3-4	5 3-8	5 5-16	5 5-8
1897	..... 7 3-16	7 7-16	7 3-4	7 15-16	7 1-2	6 1-2	6	5 13-16
1896	..... 9 5-16	7 12-16	8 1-4	7 2-8	8 1-2	8 3-8	8 1-8	7 11-16
1895	..... 5 11-16	5 9-16	6 13-16	7 1-8	8 1-4	9 1-8	9	8 5-8
1894	..... 8	7 5-8	7 5-16	7 3-16	6 15-16	6 1-4	5 3-4	5 15-16
1893	..... 9 7-8	9 3-16	7 3-4	8 1-8	8	8 1-16	8 3-16	8 1-16
1892	..... 7 13-16	7 1-16	7 1-4	7 3-8	7 1-16	7 13-16	8 3-16	10
1891	..... 9 5-16	9	8 7-18	12	8 13-16	8 5-8	8 3-8	8 1-16

## Tobacco

This important crop of the United States is separated into two distinct types, cigar leaf and heavy leaf tobacco. The former is grown in a comparatively few states, chiefly along the Connecticut valley in New England; in Pennsylvania, New York, Wisconsin, the Miami valley of Ohio and to a moderate extent in Florida and Georgia. Heavy leaf is used chiefly in manufacturing plug, cut and smoking tobacco, and

figures conspicuously in the export trade of the United States. It is composed of various types and is produced extensively in such states as Kentucky, Tennessee, southern Ohio, Maryland, Virginia and the Carolinas. Other middle and southern states grow small quantities of heavy leaf.

After distressingly low prices realized for the 1903 tobacco crop of the United States, planters in nearly all sections of the country cut down the acreage sharply during 1904. In some of the southern states, particularly the south Atlantic sections, a few districts saw a curtailment in acreage amounting to 50%. In the cigar leaf producing states of New England and Pennsylvania, the acreage was reduced to a moderate extent. In New York, farmers planted less tobacco than for several years. In fact, New York appears to be declining as a tobacco producing section. In Wisconsin the decrease was quite pronounced, but in Ohio the tendency was to continue quite extensively in producing cigar leaf types.

It has been claimed and not disputed that the bulk of the 1903 crop in the dark tobacco districts of Tennessee and Kentucky sold last year at prices below actual cost of production. As a result, considerable activity is noted there and in other parts of the south in the formation of tobacco growers' protective associations for the purpose of buoying prices. The closing months of 1904 witnessed the merger of the Consolidated, American and Continental tobacco companies into a huge corporation with an authorized capital of \$180,000,000. This is the most gigantic "trust" yet experienced in the history of the tobacco trade.

#### GROWING TOBACCO UNDER SHADE.

An almost collapse in New England has been experienced in the tent tobacco industry. The years 1902 and 1903 saw a heavy acreage planted to Sumatra in this manner in New England, but growers experienced great difficulty in selling the tobacco at remunerative prices after they had raised it. Some claimed they could get 25 cents per pound on an average for the leaf, but the enormous cost of producing Sumatra under cover rendered this price unprofitable. The area devoted to tent tobacco in New England in 1904 dropped to less than 100 acres. At the heyday of the "craze," two or three years ago, it is estimated that 800 to 1000 acres were devoted to tent tobacco along the Connecticut river. In Florida, however, growers report much success in producing



tobacco under cloth, and are hopeful of an extension of the industry. The department of agriculture conducted experiments during 1904 in breeding and selecting varieties of tobacco seed. They established two or three plantations in different parts of Connecticut. Important results are expected of this work.

#### INCREASE IN THE TOBACCO BUSINESS.

[M'fd tobacco, millions lbs.; internal revenue, millions dollars.]

	1904	1903	1902	1901	1900	1895	1890	1888	1878	1863
Manuf'd tobacco..	355	337	328	314	301	274	253	170	115	24
Cigars, millions..	7404	7426	6864	6915	6177	4099	4229	3228	1780	199
Cigaretts, mill'ns.	3226	3031	2651	2723	3259	4238	2505	640	27	0
Internal revenue...	44	44	52	51	63	31	33	42	34	3

#### IMPORTS OF LEAF TOBACCO INTO THE UNITED STATES.

[In round millions of pounds.]

Fiscal year ended June 30	Cuba	Sumatra	Others	Total leaf	Total wrappers	Value per lb. of wrappers
1904 .....	20	7	4	31	7	\$0.76
1903 .....	22	6	6	34	6	.74
1902 .....	19	5	5	29	6	.88
1901 .....	19	6	2	27	6	.90
1900 .....	11	4	2	17	5	.92
1899 .....	7	3	2	12	4	1.05
1898 .....	4	4	2	10	4	.96
1897 .....	4	7	2	13	6	.93
1896 .....	27	4	2	33	5	1.07
1895 .....	20	5	1	26	6	1.27

#### RAW TOBACCO EXPORTS FROM THE UNITED STATES.

[In millions of pounds. Fiscal year ended June 30.]

1904.....	317	1899.....	283	1894.....	290	1889.....	218
1903.....	368	1898.....	263	1893.....	266	1888.....	262
1902.....	301	1897.....	315	1892.....	255	1887.....	304
1901.....	315	1896.....	295	1891.....	249	1886.....	292
1900.....	344	1895.....	301	1890.....	255	1885.....	230

## CIGAR LEAF TOBACCO CROPS OF THE UNITED STATES.

[In thousands of cases of 350 pounds each.]

Crop of	1904	1903	1902	1901	1900	1899	1898	1892	*1889	*1879
Ohio .....	122	120	128	70	98	115	110	54	107	99
Wisconsin .....	116	158	151	57	127	113	75	51	55	30
Pennsylvania .....	83	86	92	94	71	93	89	85	82	106
New England ....	77	68	83	89	73	59	57	66	34	56
New York .....	16	23	22	30	32	31	30	43	27	19
Southern .....	15	14	14	6	6	10	7	—	2	—
Total .....	429	469	490	346	407	421	368	299	307	310

\*Federal census.

*Hay*

## THE HAY CROP AND MARKET.

Second only to corn in its money value, the yearly crop of hay in the United States is certainly worth the most careful consideration in care and marketing. It is annually worth over half a billion of dollars. Some 40,000,000 to 45,000,000 acres are annually devoted to growing hay, which area has shown a slight increase during recent years. In good years 65,000,000 tons are harvested. Taking the entire country, the average rate of yield per acre is about 1½ tons, covering a number of years, though certain sections may make much better showing during brief periods. In 1903 and also 1902 the average yield was about 1½ tons. In 1904 it was estimated at 1.45 tons. According to the department of agriculture, the price on the farm at the opening of December has in recent years shown a higher tendency, \$9 to \$10 per ton. Considerable change has taken place in the crop in recent years. Large areas through the central and western states which formerly yielded considerable wild or prairie grass have been put under cultivation and seeded to timothy and clovers.

Prairie hay is still the mainstay of the markets in the central and western states, the best grass selling well in comparison with tame grasses. The extensive yields of alfalfa in the Rocky mountain plateau and westward to the Pacific coast, farmers securing two, three and four crops in a season, are all consumed in the territories where grown, little of this description finding its way east of the Missouri river, hence affording no particular competition to the de-

scriptions first named. The leading hay states include New York, Pennsylvania, Ohio, Illinois, Iowa, Kansas, South Dakota and California. Hay for shipment is compressed into compact bales, these differing in size. Within the past few years farmers show more disposition to bale for home use, in order to avoid loss on top and outside of stack when unprotected from storms. Timothy hay can be baled as soon as it is thoroughly dry. Prairie can be baled in the field direct; the sooner the work is done, the less loss from bleaching and rain. The usual length of bales for market is 3 feet for small and 4 for large; there is a popular size 30 inches long. The cross section of the bale varies, 14x18 inches, 16x18, 16x20, 17x22, 18x22; weights 75 to 160 pounds.

But little hay is exported annually, it not being a surplus crop. Farmers in the older middle and eastern states secure higher prices through nearness to big consuming markets, yet are obliged to face some competition from prairie hay shipped directly to the east from sections west of the Mississippi river, particularly in seasons of scarcity. The Chicago market prefers a small bale, weighing 70 to 90 pounds, St. Louis takes a little heavier bale, while in New York large bales are the rule, these weighing 200 pounds and over.

A uniform scale for grading hay has not as yet been established, although the efforts on the part of the hay trade are meeting with moderate success; many of the important cities observe rules of their own. The national hay dealers' association has for years endeavored to induce all the leading markets to adopt its rules for grading.

Straw is usually marketed in large bales, the price varying greatly, according to brightness and other attraction, and the character of a somewhat irregular demand. To secure best figures, rye, wheat and oat straw should be reasonably clean, possessing good color, sound and well baled. There is a market for long, straight rye straw, if carefully pressed in bundles, and bright.

Hay is exported only when the English crop is very short and providing ocean freights are low. These vary considerably, \$2.50 to \$5 per long ton of 2240 pounds. Our exports, meager at best, have increased some in recent years; from 10,000 to 12,000 tons in the early 80's, to 50,000 and 60,000 tons annually the last few years. These are more than offset, however, by imports from Canada of 100,000 to 300,000 tons annually. The rate of duty, \$4 per ton, serves to shut out considerable quantities of Canadian hay which otherwise would cross the border. In considering the course of prices

a short year, it is always necessary to recognize the fact of the rapid development of forage crops, which in seasons of hay plenty are neglected. When early summer points to an indifferent yield of hay, farmers put in an increased acreage of hungarian, the millets, fodder corn, field peas, etc.

### EXPORTS PRINCIPAL FARM CROPS FROM THE U. S.

[In round millions.]

Year ended June 30	Flour, bbls.	Wheat, bushels	Corn, bushels	Oats, bushels	Rye, bushels	Barley, bushels	Clover seed, lbs.	Timothy seed, lbs.	Cotton, bales	Apples, barrels*	Hay, tons*	Hops, lbs.	Oil cake and meal, pounds	Cotton seed, lbs.	Tobacco leaf, lbs.
'04..17	44	56	1	1	11	6	13	6	2018	60	11	1503	13	306	
'03..20	114	75	5	5	8	16	18	7	1956	50	8	1671	52	257	
'02..18	155	27	10	3	9	7	6	7	460	153	11	1633	56	291	
'01..19	132	178	37	2	6	12	8	7	884	89	15	1714	43	307	
'00..19	102	209	41	2	24	32	15	6	526	72	13	1627	50	345	
'99..18	139	174	30	10	2	19	16	7	330	65	21	1567	34	234	
'98..15	148	209	69	16	11	31	10	8	605	82	17	1356	33	263	
'97..15	80	177	35	9	19	13	17	6	1495	62	11	1056	27	315	
'96..15	61	100	13	1	8	6	12	5	360	59	17	798	27	238	
'95..15	76	28	1	—	2	23	5	7	819	47	18	734	11	294	
'94..17	88	65	6	—	5	45	10	5	79	54	17	745	5	269	
'93..17	117	46	2	1	3	8	7	4	408	33	11	302	5	248	
'92..15	157	75	9	12	3	20	10	6	939	35	13	826	12	241	
'91..11	55	31	1	—	1	21	9	6	135	28	9	633	10	237	
'90..12	54	102	14	2	1	27	11	5	545	36	8	712	8	244	
'89..9	46	70	1	—	1	34	10	5	942	22	13	538	11	212	
'88..12	66	24	—	—	1	13	2	5	490	18	7	563	6	249	
'87..12	102	40	—	—	1	8	7	4	592	14	—	622	11	294	

\*In thousands.

### TO DO BUSINESS WITH THE GOVERNMENT.

In writing for information under any of the departments of government, apply either to the special officer under whose division the inquiry seems to fall, or if this point is not evident, write simply to the department as a whole; as, for instance, when writing for bulletins upon farm topics, address the "Department of Agriculture, Washington, D. C." But in writing for information concerning weather or meteorology, the letter would naturally be addressed to Chief of Weather Bureau, Washington, D. C.

When writing to express an opinion on pending legislation, the person to address is the representative in congress from a person's own district, or to one or both of the senators from your state. Address them simply at Washington, D. C.

HAY CROP OF THE UNITED STATES.

Under "value" is first given average value per ton of hay on the farms of the country, December 1.

Year	Acres, millions	Yield Per acre, tons	Value Total, millions tons	Value Dec. farm price	Value Crop, millions	Foreign trade, thou. tons		Price timothy per ton					
						Imports	Exports	New York			Chicago		
								March 1	August 1	December 1	March 1	August 1	December 1
1904..40	1.45	58	—	—	—	—	—	\$19.00	\$18.50	\$17.00	\$12.50	\$14.00	\$12.50
1903..40	1.4	58	—	—	—	293	51	21.00	25.00	19.00	14.00	15.00	13.00
1902..40	1.5	60	\$9.06	\$542	48	153	89	19.00	20.00	21.00	13.00	15.00	13.00
1901..39	1.3	51	10.01	506	143	89	19.50	19.00	19.00	14.00	15.00	13.90	
1900..39	1.3	50	8.89	446	144	73	18.00	19.00	19.00	11.50	12.50	14.00	
1899..41	1.4	57	7.27	412	20	65	13.50	19.00	17.50	10.00	13.00	11.50	
1898..43	1.6	66	6.00	398	4	82	16.00	15.50	13.50	9.50	8.50	8.25	
1897..43	1.42	61	—	—	—	120	62	16.00	16.00	16.00	10.00	11.00	10.00
1896..43	1.37	59	6.55	388	303	59	20.00	20.00	17.00	13.00	12.00	11.00	
1895..44	1.1	47	8.35	393	202	47	16.00	22.00	18.00	11.00	15.00	14.00	
1894..48	1.1	55	8.54	468	87	54	17.00	18.00	16.00	11.00	12.00	11.00	
1893..50	1.3	66	8.68	571	104	33	18.00	19.00	18.00	12.00	11.00	11.00	
1892..*	1.2	‡57	8.49	‡484	80	35	18.00	19.00	18.00	12.00	12.00	13.00	
1891..*	1.2	‡53	8.39	‡445	58	28	13.00	18.00	17.00	10.00	12.00	15.00	
1890..*	1.2	‡50	7.74	‡387	125	36	17.00	16.00	14.00	9.00	11.00	11.00	
1889..*	1.3	‡48	7.88	‡378	105	22	18.00	18.00	17.00	10.00	11.00	11.00	
1888..39	1.2	47	10.76	408	100	18	18.00	20.00	19.00	13.00	15.00	12.00	
1887..38	1.2	41	9.34	413	78	14	16.00	17.00	18.00	10.00	15.00	15.00	
1886..37	1.2	42	7.36	353	92	13	19.00	17.00	18.00	12.00	12.00	11.00	
1885..40	1.3	45	9.15	390	161	11	20.00	23.00	19.00	13.00	15.00	12.00	
1884..39	1.3	48	8.17	396	119	17	18.00	22.00	19.00	11.00	13.00	12.00	
1883..36	1.3	47	8.21	385	98	13	17.00	18.00	18.00	12.00	13.00	11.00	
1882..32	1.2	38	9.76	371	86	11	20.00	20.00	18.00	14.00	15.00	12.00	
1881..31	1.1	35	11.82	415	32	13	24.00	20.00	22.00	16.00	14.00	17.00	
1880..26	1.2	32	11.62	372	27	14	17.00	22.00	24.00	13.00	16.00	16.00	
1877..25	1.2	32	8.50	272	—	7	—	—	—	9.00	10.00	11.00	
1875..24	1.2	28	12.21	342	—	7	—	—	—	—	—	—	
1873..22	1.1	25	13.60	340	—	5	—	—	—	—	—	—	
1870..20	1.2	25	13.56	339	—	7	—	—	—	—	—	—	
1869..19	1.4	26	12.78	338	—	—	—	—	—	—	—	—	
1868..22	1.1	26	13.46	352	—	6	—	—	—	—	—	—	
1867..20	1.3	26	14.49	373	—	5	—	—	—	—	—	—	
1866..18	1.2	22	14.58	318	—	9	—	—	—	—	—	—	

\* No estimates for year named. Imports and exports for year ended June 30 therefore apply to crop of preceding year.

‡ Commercial estimates.

## *Apples*

### THE APPLE CROP AND MARKET.

At no time in the history of farming has more attention been given to apple culture. Growers are practicing better care of orchards and are placing the product on the market in better condition, which ought to result in increased prices for the best fruit. A feature of the past few years is the greater desire to observe the principles taught in the schools of agriculture and horticulture, that best results may be attained. Within the past year or two there has been much discussion over cultural methods, but all agree on the necessity of proper spraying, a judicious thinning of fruit and intelligent care in picking, packing and marketing. The last named includes the very prominent fact of storage on the farm, in village and in city. Farmers and fruit growers show progress in solving the problem of storage on the farm, and a great many cold storage plants have been established. The successful orchardist who raises apples for profit has long since left the ranks of those who pay little or no attention to the needed requisites.

### COMMERCIAL APPLE DISTRICTS.

The important states are New York, Maine, Michigan, Pennsylvania, Massachusetts, New Jersey, Ohio and Vermont in the northern and eastern sections of the United States. But little change has taken place recently, with the exception that large orchards are each year being put out in Arkansas and Texas and some other portions of the southwest. In the highly important territory of the central Mississippi basin are included the heavy apple producing states of Missouri, Arkansas, portions of Kansas, Illinois and Iowa. Virginia has assumed a prominent position in certain varieties of choice table apples, enjoying something of an export trade. This branch of horticulture is also receiving increased attention in Maryland, West Virginia, Kentucky and other parts of the middle south. West of the Rocky mountains, California, Oregon and Washington are making steady growth in apple culture, and Idaho, Montana and Colorado show excellent results.

The larger middle and eastern states, including Michigan, New York and part of northern New England, always furnish a liberal surplus of apples for winter markets, quite

a proportion of which is exported. Canada maintains her enviable reputation as a producer of magnificent fruit, particularly the provinces of Ontario and Nova Scotia, the last named in a good year raising 500,000 barrels of fine apples, which go to the English markets. There is still a deficiency, in some of the central states, of the best class of winter fruit, but orchardists are making commendable progress in weeding out the poor varieties and replacing with standards. It may be also noted that urgent need is still in evidence of intelligent work of orchardists in the care of trees and in battling insect and fungous pests in order to secure perfect fruit.

PROMINENT COMMERCIAL FAVORITES.

The standard varieties in winter fruit continue as for several years past. In the middle and eastern states and Canada, these include Baldwin, Greening, Northern Spy, Spitzenberg, etc. The Russet, which for a number of years was in some neglect, has recently shown more evidence of again coming into favor. In the west and southwest the Ben Davis is the most popular variety. Good selling apples in their season also include such varieties as the Gravenstein, Pippin, King, Bellflower, Jenneting and Winesap.

WEIGHTS OF VARIETIES OF APPLES PER BUSHEL.

[Bailey.]

The following varieties, when taken from the trees in October, gave the following weights:

Pounds		Pounds	
Baldwin .....	50	Rambo .....	50
Belmont .....	50	Rhode Island Greening....	52
Ben Davis .....	47	Roxbury Russet .....	50
Bunker Hill .....	49	Rubicon .....	46
Esopus Spitzenberg .....	44	Stark .....	56
Fallawater .....	48	Swaar .....	51
Golden Russet .....	53	Sweet Bough .....	39
Lawyer .....	47	Talman Sweet .....	48
Nickajack .....	51	Tompkins King .....	44
Northern Spy .....	46	Yellow Bellefleur .....	46
Pennock .....	47		

## HANDLING THE SURPLUS CROP.

Every year there is a flood of fair to good autumn apples in practically all markets. This shows that it is easy to overdo the production of this grade of fruit. Each season from August to November finds the markets flooded with soft stock, indifferent in quality, selling at mean prices. While much of this class of fruit goes from orchard to cider mills, and large quantities to evaporators, the markets as a rule are burdened with autumn apples. Most of these must be handled by domestic markets, although Europe will take a moderate quantity of strictly choice autumn fruit for table purposes. Strictly fancy table stock, by the way, generally finds a good market in the autumn.

In handling the crop of winter apples, fruit growers now generally understand approved methods of storing and keeping apples at home, so that an important part of the crop is thus cared for, providing prices are temporarily unfavorable. Apple dealers in the cities, particularly in a short year, get into the field early, and contract many orchards at an agreed price, picking, packing and shipping the fruit at their convenience when fully matured in September or October.

A feature of the apple trade in late years has been the scarcity and the high price of barrels at picking time. Prices of these packages have been very high for at least two years, cutting sharply into the profits of the growers. This reduced the profits of picking second grade fruit until a great deal was allowed to go to waste in the orchards. The season of 1904-5 was marked by a large crop of apples in New York state, some portions of New England, Michigan and a few other sections. Barrels were very scarce and prices for the fruit were such as not to pay for picking inferior stuff. It has also become quite a problem to secure sufficient help during the picking season in the large orchard districts.

## EXPORTS OF APPLES.

The export trade in apples has long since assumed a prominent place, and there is reason for belief that it will year by year show a greater total. The quantity of apples that can be shipped abroad depends very largely upon the home crop and prices, and upon supplies of fruit in western Europe, the chief consumer of the surplus exported from America. When our crop is short and prices high, exports



are restricted. But when conditions are favorable, a total of 3,500,000 barrels apples and upward is shipped from the United States and Canada in a season, the bulk of these going to the United Kingdom.

The growth of the trade in American and Canadian apples on the continent of Europe is uneven, but on the whole fairly encouraging. As this fruit is regarded by the continental orchardist a direct competitor of his own product, the agrarian party in some of the European countries, particularly Germany, does everything possible to restrict the entrance of American apples. But, in spite of difficulties of this character, our apples are each year shown much favor in central and eastern Europe.

While much of the export trade is made up of barreled fruit, the apple box is increasing somewhat in popularity with foreign dealers. On the Pacific coast the box is the standard package, in which large quantities are exported to the Orient, as well as to Europe. The apple export trade of 1903-4 was very encouraging, exceeding 3,800,000 barrels from the United States and Canada. The season of 1904-5 promises to be equal, if not greater. Perhaps the most popular seller in the English market is the Baldwin, although King, Newtown Pippin, Northern Spy, Greening and Russet are favorites.

Indiscriminate packing and shipping is a mistake too often made in exporting. It should be remembered that foreign buyers demand sound fruit well selected and properly packed; nothing else should be shipped abroad. Ocean freights on apples, Boston or New York to Liverpool, are usually 40 to 70 cents per barrel. Selling charges in Liverpool are close to 15 cents, this including dockage, town dues, insurance, advertising, sampling and labor in handling. In addition is the 5% commission on sales. Suppose, for example, a parcel of 100 barrels Baldwins, well packed, sells at 16 shillings per barrel, equal to about \$3.85; 5% commission on this would be 19 cents, to which may be added the 15 cents, total about 34 cents, this representing charges for selling a barrel of apples after reaching Liverpool.

As a rule, apples landing at English markets are sold at auction and quick disposition is made of the entire shipment, the fruit going in lots of 20 barrels and upward. Great Britain always has a small to moderate crop of apples; also imports fair quantities from northern Europe during the autumn, and in early spring Australia sends some apples to the mother country. But in the main, the chief dependence is on the United States and Canada, which ship freely dur-

ing the winter season, or from September to April inclusive. Ocean freights on apples, Boston or New York to Hamburg, the leading German market, are usually 70 to 75 cents per barrel, occasionally as low as 60 cents.

APPLE CROP OF UNITED STATES IN RECENT YEARS.

Crop of	1904 Barrels	1903 Barrels	1902 Barrels
<b>New England:</b>			
Maine .....	1,425,000	1,050,000	1,200,000
New Hampshire .....	940,000	675,000	900,000
Vermont .....	700,000	430,000	600,000
Massachusetts .....	985,000	660,000	1,050,000
Rhode Island .....	140,000	113,000	150,000
Connecticut .....	670,000	479,000	720,000
<b>Total .....</b>	<b>4,870,000</b>	<b>3,407,000</b>	<b>4,620,000</b>
<b>Central:</b>			
New York .....	7,200,000	5,250,000	6,250,000
New Jersey .....	1,250,000	1,120,000	1,400,000
Pennsylvania .....	4,150,000	8,800,000	3,300,000
Delaware .....	195,000	150,000	235,000
Ohio .....	3,275,000	3,100,000	3,500,000
Michigan .....	3,515,000	3,260,000	3,400,000
Wisconsin .....	375,000	300,000	280,000
<b>Total .....</b>	<b>19,960,000</b>	<b>16,980,000</b>	<b>18,365,000</b>
<b>Middle west:</b>			
Indiana .....	730,000	980,000	1,400,000
Illinois .....	632,000	924,000	2,100,000
Missouri .....	600,000	466,000	1,400,000
Kansas .....	540,000	450,000	1,000,000
Nebraska .....	345,000	214,000	450,000
Iowa .....	1,550,000	1,306,000	1,250,000
Arkansas .....	1,100,000	800,000	1,000,000
<b>Total .....</b>	<b>5,397,000</b>	<b>5,240,000</b>	<b>8,600,000</b>
<b>Southern:</b>			
West Virginia .....	960,000	2,400,000	2,000,000
Virginia .....	1,850,000	2,250,000	2,500,000
Maryland .....	375,000	975,000	780,000
Kentucky .....	2,900,000	2,700,000	2,000,000
Tennessee .....	2,650,000	2,295,000	1,800,000
<b>Total .....</b>	<b>8,735,000</b>	<b>10,620,000</b>	<b>9,080,000</b>

Crop of	Barrels 1904	Barrels 1903	Barrels 1902
<b>Far west:</b>			
Colorado .....	275,000	220,000	200,000
Idaho .....	105,000	95,000	100,000
Utah .....	115,000	110,000	95,000
Montana .....	28,000	25,000	25,000
California .....	865,000	1,150,000	1,100,000
Oregon .....	580,000	502,000	490,000
Washington .....	503,000	487,000	415,000
Total .....	2,449,000	2,559,000	2,415,000
All other .....	3,950,000	3,820,000	3,545,000
United States crop.....	45,360,000	42,626,000	46,625,000

Earlier years: 1901, 26,970,000; 1900, 56,820,000; 1899, 58,466,000 (federal census figures); 1898, 69,879,000; 1889, 57,242,000 (federal census figures).

#### EXPORTS DRIED APPLES FROM UNITED STATES.

Year ended June 30	Pounds	Total value	Avg. value	Year ended June 30	Pounds	Total value	Avg. value
1904	22,730,009	\$1,257,900	5.58c	1894	2,346,645	\$163,054	5.90c
1903	39,647,179	2,381,469	6.00	1893	7,996,819	482,095	6.02
1902	15,664,468	1,190,593	7.60	1892	26,042,063	1,288,102	4.67
1901	28,309,023	1,510,581	5.33	1891	6,973,168	409,605	5.87
1900	34,964,010	2,247,851	6.42	1890	20,861,462	1,038,682	4.98
1899	19,506,789	1,245,733	6.45	1889	22,102,579	1,201,070	5.43
1898	31,031,254	1,897,725	6.11	1888	11,803,161	812,682	7.73
1897	30,883,921	1,356,578	4.39	1887	8,130,996	413,863	5.08
1896	26,691,963	1,340,507	5.02	1886	10,473,183	548,434	5.23
1895	7,085,946	461,214	6.50	1885	18,416,573	1,062,359	5.77

#### POINTS IN BARRELING APPLES.

In packing for either domestic or foreign markets, proper selection, uniform size of package and good judgment in character of the work bring best results. The fruit should run uniform throughout the barrel, both in quality and size; should be closely and tightly packed, without undue bruising, one end of the barrel nicely faced, the package well coopered, and stenciled with the name of the variety and quality. No. 1 apples should prove just what they claim, the barrel containing absolutely no No. 2 fruit. In order to ship safely and satisfactorily, apples must be packed tight.

No. 1 apples must be  $2\frac{1}{2}$  inches in diameter if of the following varieties: Ben Davis, Willow Twig, Baldwin, Greening. Varieties such as Romanite, Russet, Winesap, Jona-

than, Missouri Pippin and others will be  $2\frac{1}{4}$  inches in diameter. They must be free from worms, not over 10% affected by defacement of surface, hand packed, not bruised or skin broken, and must be of a bright, normal color, and shapely. A No. 2 apple may be one-quarter of an inch less in size, not over 20% affected by defacement of surface, etc.

The standard apple barrel of the United States, i. e., the barrel adopted by the International Apple Shippers' Association, contains 100 quarts, or about the same as the standard cranberry barrel. Officials of this association state that the apple barrel should have  $17\frac{1}{2}$ -inch heads,  $28\frac{1}{2}$ -inch staves and 64 inches bulge. This barrel holds three bushels. Bushel boxes were recommended to be  $11\frac{1}{2} \times 11\frac{1}{2} \times 20$  inches on the inside. While this barrel described is generally considered as standard, the apple crop of the country is by no means packed in barrels of this uniform size. While it is used in most orchards of western New York, the Hudson river district uses a smaller barrel known as "the  $16\frac{1}{2}$ -inch barrel." In Nova Scotia, a district which turns out 500,000 barrels of export apples each year, the 96-quart barrel is generally used. In Ontario the 30-inch stave barrel is much used.

#### LEADING APPLE COUNTIES OF U. S. AND CANADA.

Arkansas—Benton, Carroll, Madison, Washington.

California—Sonoma, Santa Cruz, Los Angeles, Eldorado, Napa, Santa Clara.

Colorado—Fremont, Jefferson, Boulder, Larimer, Mesa, Delta, Montrose.

Connecticut—Fairfield, Litchfield, Hartford, New Haven.

Illinois—Madison, Adams, Marion, Shelby, Union, Williamson, Hancock, Wayne, Washington.

Iowa—Adams, Clarke, Decatur, Fremont, Mills, Montgomery, Page, Ringgold, Taylor, Union, Warren, Lee.

Kansas—Labette, Cherokee, Leavenworth, Bourbon, Brown, Douglas, Shawnee.

Kentucky—Meade, Warren, Hardin, Campbell.

Maine—Oxford, Kennebec, Cumberland, Penobscot, Somerset, York.

Maryland—Baltimore, Frederick, Carroll, Montgomery.

Massachusetts—Worcester, Middlesex, Franklin, Hampshire, Berkshire, Essex.

Michigan—Berrien, Oakland, Lenawee, Kent, Allegan, Van Buren, Cass, Saint Joseph.

Missouri—Nodaway, Jasper, Vernon, Greene, Andrew, Jackson, Howell, Clay, Texas, Webster.

Nebraska—Otoe, Richardson, Nemaha, Cass, Johnson, Pawnee.

New Hampshire—Grafton, Merrimack, Hillsboro, Rockingham, Carroll.

New York—Niagara, Monroe, Genesee, Erie, Wayne, Orleans, Ontario, Steuben, Oswego, Albany.

Ohio—Washington, Ashtabula, Columbiana, Cuyahoga, Clermont, Stark.

Oregon—Clackamas, Marion, Linn, Yamhill, Washington.

Pennsylvania—Allegheny, Crawford, Erie, Butler, Susquehanna, Westmoreland, Clinton.

Vermont—Windsor, Windham, Orange, Washington, Rutland.

Virginia—Augusta, Rockingham, Albemarle, Patrick, Rappahannock.

Washington—Walla Walla, Columbia, Clark, Whitman, Spokane.

Wisconsin—Fond du Lac, Outagamie, Rock.

Nova Scotia—Annapolis, Halifax, Hants, Kings.

Ontario—Brant, Dundas, Durham, Elgin, Essex, Frontenac, Glengarry, Grenville, Haldimand, Halton, Huron, Kent, Lambton, Leeds, Lincoln, Middlesex, Norfolk, Northumberland, Ontario, Oxford, Peel, Perth, Prince Edward, Stormont, Waterloo, Welland, Wellington, Wentworth, York.

Quebec—Chateaugay, Drummond, Huntington, Iberville, Richmond.

### HISTORIC FIRES.

There have been many destructive fires in the history of the world from Nineveh to Baltimore.

London, 1666, when five-sixths of the city within the walls was burned. This was the year following the great plague, and appalling as was the loss, the gain was even greater, as the germs of the plague were destroyed, and the new city was built more openly and hygienically.

Moscow, 1812, when the French entered the Russian capital, and fires were started which raged six days and burned nine-tenths of the city.

In this country, one of the first great fires was in New York, 1835, loss \$18,000,000. Portland, Me., was set on fire by Fourth of July crackers, and suffered a loss of \$10,000,000. Chicago, in 1871, had the most disastrous conflagration of any in the United States, with a loss of 200 lives, \$190,000,000 in property, and the destruction of thousands of homes. Boston followed in 1872, the loss being almost entirely in the business section, amount \$80,000,000. Baltimore, in 1904, burned the commercial center, loss \$50,000,000.

APPLES—FOREIGN MOVEMENT AND DOMESTIC PRICES.

Winter apples per barrel at wholesale at New York

Exports apples from United States and Canada (Last three figures (00's) omitted)

Season Sept. 1 to June 1	Barrels exported from							Barrels received at					Year's total	October 15	January 1	March 1
	New York	Boston	Montreal	Portland	Hallifax and St. John	Liverpool	London	Glasgow	Various	Year's total						
1903-4..	1120	677	732	361	595	1616	870	475	475	4505	\$1.50@3.50	\$2.00@3.50	\$1.50@4.00			
1902-3...	733	839	476	338	157	1445	458	398	242	2543	1.25@3.50	1.25@3.50	1.50@4.50			
1901-2...	134	143	122	100	271	445	281	136	29	891	1.25@4.50	1.75@4.50	3.50@5.00			
1900-1...	241	410	249	225	200	834	288	233	58	1414	1.00@3.25	1.25@4.00	2.25@5.00			
1899-0...	307	178	286	149	361	664	343	216	119	1343	1.25@3.50	1.25@4.00	2.00@4.25			
1898-9...	158	237	405	144	277	716	300	183	82	1282	2.00@4.00	2.50@5.00	3.50@5.00			
1897-8...	362	176	163	126	82	308	97	111	82	588	1.75@4.00	3.00@4.50	2.50@4.00			
1896-7...	570	1015	700	221	416	1582	717	411	210	2920	1.00@1.75	1.00@1.62	2.25@2.50			
1895-6...	231	84	128	142	166	411	196	128	16	751	1.50@1.75	1.50@3.50	1.50@4.55			
1894-5...	221	523	278	156	264	853	389	173	23	1438	1.50@2.50	2.25@2.75	2.00@6.00			
1893-4...	29	5	56	50	35	101	33	39	3	175	2.00@2.50	3.75@4.00	3.50@5.55			
1892-3...	218	204	429	235	117	798	174	221	10	1204	1.50@2.50	2.50@3.50	1.50@3.50			
1891-2...	537	340	320	163	87	918	224	283	26	1450	1.25@1.75	1.25@1.75	1.50@3.50			
1890-1...	77	23	182	80	89	252	117	81	1	451	1.00@5.00	2.00@6.00	2.00@6.50			
1889-0...	170	133	163	122	54	419	128	116	14	678	1.50@4.00	2.00@4.00	2.00@6.50			
1888-9...	475	382	291	146	95	790	279	272	65	1407	1.00@3.50	1.25@2.50	1.75@2.00			
1887-8...	276	164	93	25	33	347	104	140	18	808	1.10@2.25	1.25@4.50	1.50@3.50			
1886-7...	176	304	107	101	96	469	188	139	13	608	1.50@2.50	2.00@6.00	2.00@4.00			
1885-6...	466	222	69	88	39	538	147	175	24	885	1.00@2.00	1.37@2.50	1.12@2.00			
1884-5...	256	307	84	71	41	492	123	138	71	789	1.00@1.75	1.75@2.00	2.50@3.20			
1883-4...	53	7	7	10	4	47	5	30	—	82	1.25@3.25	3.00@3.50	2.75@4.20			
1882-3...	170	102	64	17	19	253	47	81	13	306	1.50@3.00	2.00@3.75	2.25@4.55			
1881-2...	76	65	56	6	14	134	46	59	—	239	2.00@4.00	2.00@4.00	1.50@4.00			
1880-1...	599	510	145	40	24	830	178	216	95	1329	—	—	—			

## Potatoes

### POTATO CROP OF THE WORLD.

The world's production of potatoes in an average year is approximately 4000 million bushels. This may be compared with the world's crop of wheat of 3000 millions, of corn substantially the same, of rye 1300 and of barley 800 million bushels. This brief array of figures shows at a glance the great importance of what is a principal food product of modern nations. The potato is a staple of the masses to such an extent that Europe produces annually  $2\frac{1}{2}$  times as much in bulk of this crop as of wheat. The average potato crop of all Europe reported, including the United Kingdom, is something like 3500 million bushels. The rate of yield per acre is larger in the United Kingdom and Europe than in the United States, hinting at the possibility of greatly increased production of potatoes from a given area, providing conditions are favorable.

The potato crop of 1904 was unusually large, exceeding anything in recent years. Some development of rot in important potato producing states, such as Wisconsin, Michigan and New York, cut into the crop somewhat. According to final returns of American Agriculturist's county correspondents, carefully summarized, also giving due weight to all other reliable testimony at hand, the potato crop of the United States in 1904 approximates 288,700,000 bushels, compared with 255,000,000 bushels one year ago, and 272,000,000 bushels in 1902.

The quality was generally good, although some complaints of rather large and coarse tubers reach us from a few sections. This quite outside of the development of rot just at time of harvest, which proved quite serious in portions of certain states, as indicated.

### WHERE THE COMMERCIAL CROP IS LARGE.

In studying the latest comparative figures on the potato crop by states, it will be noted that the increase in the heavy producing sections of the northwest compared with 1903 was very marked. Michigan, Wisconsin, Iowa and Minnesota together showed something like 24,000,000 bushels more potatoes than in 1903, although the gain is not so marked compared with two years ago.

New York, always a very important producer, and a potent factor in shaping values, both east and west, showed up with much the same crop as 1903, after taking account of the development of rot, which slightly reduced the average rate of yield of marketable potatoes. Pennsylvania and Ohio made a slight increase, while the gain in New England over 1903 was substantial, owing chiefly to the splendid crop produced in the Aroostook potato district of northern Maine. Taking the country at large, the average rate of yield per acre appeared to be something like ten bushels heavier than a year earlier, and substantially greater than in any recent year.

The potato crop of 1904, compared with the production of recent years, was as follows:

Crop of	Acres	Per acre	Bushels
1904 .....	3,025,000	95	288,664,000
1903 .....	3,004,000	85	255,009,000
1902 .....	3,016,000	90	271,777,000
1901 .....	2,919,000	62	183,321,000

In making comparisons it should be borne in mind that with the exception of 1902 the crops above presented were all small crops, so that while the crop for 1904 closely crowds the 300 million mark, as a matter of fact it is only moderately larger than previous good crops, and only slightly larger than the crop of 1899, as reported by the federal census enumeration. In the meantime, the population of the country has increased by fully 7%, so that the relative potato supply for the two years in question is not radically changed.

It is a most important factor in making up food requirements. A crop universal geographically, yet the main surplus available for markets after harvest is ended is derived from comparatively few states. These include New England, New York, Michigan, Wisconsin, Minnesota, Colorado, the Dakotas, and to a less extent Iowa, Ohio, Pennsylvania, Nebraska, Utah and California. While other sections, including the south, turn off liberal crops, these as a rule are mostly consumed at home, although in certain years various states not in the commercial belt named have a liberal surplus for export beyond their borders. Nor is there much international trade in potatoes, nearly every country, both in America and Europe, consuming almost or quite its entire production, one year with another. A number of countries yield a moderate surplus beyond home requirements, export-



ing this to neighboring territory not so fortunate. But so far as the United States is concerned, the imports and exports are insignificant compared with the great volume of the crop.

A full yield of potatoes in the United States is 280,000,000 bushels. This has been exceeded but once or twice, while in short years the crop measured only 150 to 175 millions. Where extended areas have been brought under this crop in some states, a portion of the normal acreage in other states may be, one year with another, devoted to other crops, particularly following a season of low prices.

Owing to the great bulk and perishable nature of the crop, it cannot be handled as advantageously as many others. As a result, in years of big crops, net returns to farmers located long distances from markets are often quite unsatisfactory. The area under this crop is about 3,000,000 acres.

The potato is a pioneer, in a sense, yielding exceptionally well in such comparatively new countries as northern Maine, parts of Michigan, Wisconsin, Minnesota, the Dakotas and Colorado. Northern grown stock is in great demand each season for shipment to the middle and southern states for seed purposes. This applies particularly to quality, rate of yield and freedom from disease. The chief enemies of the potato crop are insects, blight and rust, followed by a tendency toward rapid rotting late in the season and after harvest.

#### THE FOREIGN TRADE IN POTATOES IS SMALL,

year by year, yet in some seasons makes a respectable showing. When the home crop is poor, considerable quantities of potatoes are imported from Scotland and northern Europe, and imports usually include some stock from the lower Canadian provinces. Some potatoes are brought to Atlantic coast cities each winter and spring from the Bermudas, before our own southern crop is ready for market, but these exert no appreciable influence on our aggregate crop of late fall.

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## POTATO CROP BY STATES—ACREAGE AND YIELD.

[In round thousands.]

Crop of	Acres grown—				Yield per acre, bus.				Total production, bus.			
	1904	1903	1902	1901	1904	1903	1902	1901	1904	1903	1902	1901
Me. ....	66	63	60	55	200	160	125	140	13,200	9,765	7,500	7,700
N. H. ...	20	19	20	20	145	100	85	80	2,900	1,900	1,700	1,600
Vt. ....	22	22	24	23	110	125	100	85	2,420	2,750	2,400	1,955
Mass. ...	25	24	26	25	125	103	108	65	3,125	2,475	2,808	1,625
R. I. ...	5	5	5	5	100	80	88	85	500	440	484	425
Ct. ....	20	20	22	22	100	90	98	70	2,000	1,800	2,205	1,540
N. Y. ...	360	360	365	350	95	85	90	85	30,960	30,600	32,800	29,850
N. J. ...	45	45	46	45	86	100	90	70	4,275	4,500	4,140	3,150
Pa. ....	210	210	220	195	80	80	77	75	17,220	16,800	16,940	14,625
O. ....	173	170	170	168	95	78	100	58	16,435	13,200	17,030	9,744
Mich. ...	268	268	270	210	106	81	85	90	28,408	21,700	23,000	18,900
Ind. ...	92	90	94	110	91	77	90	28	8,372	6,930	8,460	3,080
Ill. ....	151	148	145	153	98	72	90	32	14,798	10,656	13,050	4,896
Wis. ...	242	240	235	225	110	65	100	60	26,620	15,600	23,500	13,500
Ia. ....	164	157	175	170	118	68	100	27	19,352	10,675	17,500	4,590
Minn. ...	150	147	145	130	84	71	95	56	12,600	10,435	13,775	7,280
Mo. ....	85	88	92	89	89	71	110	20	7,565	6,248	10,120	1,780
Kan. ...	85	86	91	90	80	67	105	24	6,800	5,762	9,555	2,160
Neb. ...	88	85	84	164	110	74	120	34	9,680	6,290	10,080	5,576
S. D. ...	37	36	35	61	90	100	100	50	3,330	3,600	3,500	3,050
N. D. ...	21	22	22	37	104	80	85	90	2,184	1,760	1,870	3,330
Col. ...	40	40	39	38	125	100	100	110	5,000	4,000	3,900	4,180
Cal. ...	42	45	45	30	135	122	140	125	5,670	5,490	6,300	3,750
Ore. ...	33	33	33	23	90	157	130	146	2,970	5,180	1,690	3,220
Wash. ...	26	26	27	21	115	164	125	115	2,990	4,264	3,375	2,415
Other . .	550	525	525	460	78	75	65	60	43,280	41,625	34,125	29,400
Total . .	3025	3005	3016	2919	95	81	90	62	288,664	244,445	271,777	183,321

AMERICAN POTATO CROP FOR 21 YEARS, WITH  
COMPARISONS.

The imports and exports corresponding to the domestic crop of 1903, are for the fiscal year ending June 30, 1904, as all imports are during the period October to June, and so on for the other years. Boston market prices for November, January and April, following the harvest, are selected, because most sensitive to importations. The average value of imported potatoes is given under "Imports." The average prices on farms of United States December 1, as returned to

United States department of agriculture, are stated under "Farm."

Crop of potatoes	Acres	Yield in bus.		United States		Prices of potatoes				
		Per acre	Total crop	Imports, bus.	Exports, bus.	Imp. H.	Farm Nov.	Jan.	Apr.	
1904..	3,025,000	95	288,664,000	*18,965	*213,160	—	—	\$0.55	\$0.60	—
1903..	3,005,000	81	244,445,000	3,166,581	484,042	\$0.58	\$0.50	.55	.70	\$1.05
1902..	3,016,000	90	271,777,000	358,505	843,075	.66	.47	.78	.83	.85
1901..	2,919,000	66	193,121,000	7,666,162	628,484	.41	.77	.80	.87	.95
1900..	2,923,000	87	265,100,000	371,909	741,483	.61	.43	.65	.72	.70
1899..	2,976,000	81	242,950,000	155,413	803,360	.95	.39	.51	.65	.58
1898..	2,778,000	73	203,928,000	530,420	581,833	.56	.41	.43	.70	.90
1897..	2,745,000	64	174,116,000	1,171,282	605,187	.40	.55	.75	.83	.90
1896..	2,865,000	86	245,480,000	247,186	926,646	.58	.29	.39	.40	.43
1895..	3,204,000	88	286,350,000	175,240	680,000	.73	.27	.38	.35	.35
1894..	2,914,000	64	185,000,000	1,343,000	573,000	.45	.54	.38	.58	.70
1893..	2,605,000	72	183,000,000	3,003,000	793,000	.42	.59	.68	.68	.80
1892..	2,506,000	62	155,000,000	4,317,000	846,000	.47	.67	.80	1.00	1.10
1891..	2,660,000	93	250,000,000	187,000	557,000	.95	.37	.50	.50	.45
1890..	2,606,000	58	150,000,000	5,402,000	341,000	.51	.78	.85	1.05	1.15
1889..	2,601,000	76	218,000,000	3,416,000	407,000	.40	.40	.60	.70	1.00
1888..	2,533,000	80	202,000,000	883,000	472,000	.36	.40	.60	.60	.60
1887..	2,357,000	57	134,000,000	8,260,000	404,000	.45	.69	.80	.90	1.12
1886..	2,287,000	78	188,000,000	1,432,000	435,000	.38	.45	.60	.60	.70
1885..	2,226,000	78	175,000,000	1,937,000	495,000	.33	.53	.60	.85	.80
1884..	2,221,000	86	191,000,000	659,000	80,000	.30	—	.57	.58	.65

## Sugar

### THE AMERICAN SUGAR INDUSTRY.

The growing of cane and beets in the United States for the production of sugar is becoming one of the important industries. The permanent success of the proposition is so thoroughly bound up with the import trade in raw sugars that the business is extremely sensitive to tariffs, reciprocity treaties, or "free trade" between the United States and our new insular possessions, such as Hawaii, Porto Rico and the Philippines. The domestic production of cane sugar, confined largely to Louisiana, has shown very slow growth in recent years. Perhaps one of the greatest needs in developing the cane sugar industry is a higher sugar content in cane. This is a matter discussed far and wide, forming an important topic in every convention of cane growers.

The sugar beet industry has held its own in the past two or three years, and under favorable conditions is a profitable

crop. The beets are either grown by companies who own factories, or by farmers who live in the neighborhood of such factories.

So far as the world's production of cane sugar is concerned, this has increased from substantially 3,000,000 tons annually to upward of 4,000,000 tons. In the season of 1899-0, cane sugar constituted only 35% of the world's total sugar production. By 1902-3 this had increased to 42%, and in 1904-5 48%, due to the shortage in beets. According to figures furnished by the Sugar Trade Journal, and Licht's estimate of European crops, the world's output of cane and beet sugar, 10,471,800 tons for 1903-4, was the maximum in the history of the sugar industry. The Cuban output of cane sugar has assumed normal proportions after the war disturbances of recent years. Cuba and Java continue far in the lead as single producers of cane sugar, making up fully half the world's total, followed in importance by Hawaii, the Philippines, Porto Rico, etc. A feature worthy of special note is the hint that the world's production of cane sugar is increasing rapidly, as above indicated.

#### METHOD OF PAYING FOR SUGAR BEETS.

The matter of paying for sugar beets in the United States is based primarily on the purity and per cent of sugar content. In all cases, the price is for beets delivered at the factory net weight less tare. Two methods are in vogue: 1, to pay a straight price for all beets; 2, to pay a minimum price for beets containing 12% sugar and a certain fixed sum, usually 25 cents per ton, for each additional 1% of sugar.

#### PRICES AT SUGAR FACTORIES.

A glance at the record of prices paid at various beet sugar factories during the season of 1904-5 affords interesting comment on the industry. In Lakin county, Kan., the crop was between 3000 and 4000 tons, for which growers received \$5 per ton, with \$1 additional as bounty from the state. To stimulate the industry in untried areas, \$9000 state bounty was offered to be paid to growers who marketed and manufactured into sugar beets testing 12% or more of sugar. This resulted in a large increase in acreage and a general stimulus to the business. At Holland, Mich., the factory was obliged to give notice to farmers not to deliver their beets except in small amounts. The crop was very large in that section

and the factory was deluged with beets. Through some sections of Wisconsin the crop was not up to standard of sugar content and farmers did not market the beets, but fed them to stock, finding good returns in this practice. The great need throughout beet growing sections is for improvement in methods of culture and increase in sugar content.

### THE SUGAR TRADE IN THE UNITED STATES.

All the figures in the following table (except those of the beet sugar production for all years and the 1903-4 figures of the cane sugar production, which are from Willet & Gray's Statistical Sugar Trade Journal), were compiled from the Statistical Abstract of the United States, with advance figures furnished by the bureau of statistics.

Fiscal years	Domestic production			Imports		Consumption	
	Cane, long tons	Beets, long tons	Total, long tons	Total, long tons	Value, millions	Total, long tons	Per cap. pounds
1904-5...	340,000	191,000	531,000	—	—	—	—
1903-4...	215,000	208,135	423,135	1,651,171	\$71.9	—	—
1902-3...	300,000	195,463	495,463	1,822,191	72.1	—	—
1901-2...	310,614	163,126	473,740	1,779,466	90.4	2,372,316	68.7
1900-1...	277,891	76,859	354,750	1,798,252	100.2	2,219,847	65.2
1899-0...	149,191	95,000	244,191	1,781,361	94.9	2,078,068	62.6
1898-9...	248,954	32,471	281,425	1,200,857	60.4	2,002,902	61.5
1897-8...	316,183	40,399	356,582	2,195,493	99.0	2,070,978	64.8
1896-7...	287,578	40,000	327,578	1,743,901	89.2	1,960,066	62.5
1895-6...	242,693	30,000	272,693	1,595,763	76.4	1,949,744	63.4
1894-5...	325,621	20,443	346,064	1,939,818	126.8	2,012,714	66.7
1893-4...	272,913	20,453	493,366	1,681,448	116.2	1,906,758	64.4
1892-3...	206,816	12,091	218,907	1,586,834	104.4	1,853,370	63.8
1891-2...	165,437	5,359	170,796	1,554,142	105.7	1,888,851	66.3
1890-1...	221,951	2,800	224,751	1,309,826	96.0	1,476,377	52.8
1889-0...	136,503	2,600	139,103	1,233,122	88.5	1,416,474	51.8
1888-9...	153,909	1,910	155,819	1,205,484	74.2	1,519,283	56.7
1887-8...	167,814	255	168,069	1,400,197	78.4	1,381,714	52.7
1886-7...	85,394	800	86,194	1,200,840	80.7	1,459,290	56.9
1885-6...	135,158	600	135,758	1,213,341	72.5	1,298,380	51.8
1884-5...	100,876	953	101,829	1,230,543	98.2	1,309,383	53.4

### RATES OF DUTY ON FOREIGN SUGARS.

1861, 5 cents per pound; 1862, 4 cents per pound; 1864, 5 cents per pound; 1870, 4 cents per pound; 1874, 5 cents per pound; 1883, 2 1/3 to 3 1/2 cents per pound; 1890, 1/2 cent duty, bounty on domestic sugar, 2 cents per pound; 1894, 40 per cent ad valorem; 1897, 1 to 2 1/4 cents per pound, average about 72 per cent. The highest figures in the present (1897) law are for refined sugar, but raws constitute by far the bulk of imports.

## WORLD'S PRODUCTION OF SUGAR.

[In tons of 2240 pounds.]

Season	Beet	Cane	Total	Season	Beet	Cane	Total
1904-5*	5,311,000	4,591,000	9,902,000	1895-6..	4,232,000	2,556,000	6,788,000
1903-4..	6,083,000	4,388,800	10,471,800	1894-5..	4,691,000	3,137,000	7,828,000
1902-3..	5,717,332	4,117,629	9,834,961	1893-4..	3,786,000	3,260,000	7,046,000
1901-2..	6,923,487	4,063,282	10,986,769	1892-3..	3,444,000	2,769,000	6,113,000
1900-1..	6,066,939	3,650,416	9,717,355	1891-2..	3,445,000	2,785,000	6,230,000
1899-0..	5,596,390	2,742,983	8,339,373	1890-1..	3,640,000	2,597,000	6,237,000
1898-9..	5,014,572	2,929,865	7,944,437	1889-0..	3,563,000	2,138,000	5,701,000
1897-8..	4,872,173	2,864,255	7,736,428	1888-9..	2,708,000	2,359,000	5,067,000
1896-7..	4,954,000	2,839,000	7,793,000	1887-8..	2,407,000	2,541,000	4,948,000

\* The figures since 1896-7 are compiled from the following sources: Cane sugar production of the world and beet sugar production of the United States, Willet & Gray; beet sugar production of Europe, Licht.

## Hops

Hops are grown in a small way in a number of states, but there are only two, distinct commercial hop producing sections in the United States. The most important is the Pacific coast, comprising the states of California, Oregon and Washington. This district raises nearly three-fourths of the commercial crop of the country. New York produces practically all the remainder. Wisconsin boasts a few commercial yards, but her total output of hops is light. The soil and climate of the Pacific hop states are conducive to a high yield per acre, much more so than New York. In recent years the acreage in the former district has enlarged, while New York hop growers lost interest in the business until the better prices of the past season. A continuation of these may cause a revival of the industry in the Empire state.

Great Britain is cutting down her hop acreage steadily. In 1885 United Kingdom farmers devoted 70,127 acres to hops, whereas the 1904 acreage was only 47,799. Germany is an important producer of hops, and the same may be said of Austria. Belgium, France and Russia cut some figure in the commercial world, and Holland to a moderate extent. Australasia grows about 10,000 bales per annum, not enough to supply her home demand.

Owing to the partial failure of the English crop, and the general increased consumption of hops throughout the world, the 1904 output sold at the highest figures since the

sensational prices of 1882. Overproduction in 1894-5 caused the lowest values on record. Since that time, however, there has been a gradual reovery and prices are at a level encouraging to producers.

## FOREIGN HOP TRADE.

Exports of hops from the United States for the year ended June 30, 1904, showed a revival from the low ebb of the preceding season. As the English crop of 1904 was the smallest in many years, it was the prediction of dealers that the United States would be able to sell her surplus hops abroad during 1904 and 1905.

## EXPORTS AND IMPORTS OF HOPS AND VALUES.

[Last 000's omitted; year ending June 30.]

Crop of	Exports, pounds	Imports, pounds	Value, exports	Value, imports	Crop of	Exports, pounds	Imports, pounds	Value, exports	Value, imports
1904..	10,986	2,758	\$2,116	\$1,374	1898..	17,161	2,376	\$2,643	\$648
1903..	7,794	6,011	1,910	1,808	1897..	11,425	3,018	1,305	630
1902..	10,715	2,905	1,550	834	1896..	16,765	2,772	1,479	600
1901..	14,964	2,606	2,467	851	1895..	17,523	3,134	1,873	600
1900..	12,639	2,590	1,708	713	1894..	17,473	828	484	3,844
1899..	21,146	1,319	3,626	591					

## U. S. FOREIGN TRADE. SUPPLY, CONSUMPTION.

Crop of	Exports	Net supply	Imports	Total supply	†Consumption	Crop of	Exports	Net supply	Imports	Total supply	†Consumption
1903...	61	144	15	159	267	1896...	63	112	17	129	177
1902...	43	152	33	185	247	1895...	93	199	15	214	184
1901...	60	150	16	166	226	1894...	97	225	17	240	184
1900...	83	125	15	140	219	1893...	97	171	5	176	171
1899...	70	140	14	154	204	1892...	63	170	15	175	178
1898...	117	98	7	105	208	1891...	70	138	13	151	164
1897...	95	130	13	143	192	1890...	49	143	21	164	157

\* Thousands of bales. † Consumption at one pound hops to a barrel of beer.

## PRICES AT NEW YORK CITY, CHOICE STATE HOPS.

[In cents per pound.]

	1903-4	1902-3	1901-2	1900-1	1899-0	1898-9
Sept. ....	27@30	26 @28	16 @16½	18 @15	18 @14	12@13
Oct. ....	31@33	26 @28	13 @15	13½@15	14 @15	15@16
Nov. ....	30@32	32 @34	14 @15½	18 @19	13 @14½	20@21
Dec. ....	31@33	36 @38	14 @15½	20 @22	13½@14½	20@21
Jan. ....	34@37	35 @37	14 @15½	20 @22	12½@14	19@20
Feb. ....	36@38	35 @37	14½@16	20 @22	13 @14	19@19½
Mar. ....	35@36	35 @36	17 @18	20 @22	13 @14	18@19
Apr. ....	34@36	30 @32	17½@18½	20 @21	13 @14	17@18
May ....	33@35	28 @24	19 @20	19 @20	13 @14	16@17
June ....	33@35	23 @24	20½@22	18 @19	18 @14	16@17
July ....	31@34	21 @22	21½@23½	17½@18	13 @14½	15@16
Aug. ....	33@35	20½@24½	24½@26	17 @18	13 @14	15@16
	1896-7	1894-5	1893-4	1891-2	1890-1	1889-90
Sept. ....	8½@10	9 @12	22 @24	15 @18	23@28	14@16
Oct. ....	9 @11	9 @11	21 @24	16 @17	43@47	11@13
Nov. ....	10½@15	10 @13	22 @23	19 @21	35@47	11@14
Dec. ....	14 @16	11 @12½	21½@23	20 @22	32@45	13@14½
Jan. ....	14 @15	10½@12	21½@22½	21 @28	32@38	13@16
Feb. ....	13½@14	10 @11	21 @23	25 @27	33@36	13@20
Mar. ....	11½@13	10 @11	18 @21	24 @25	28@31	14@20
Apr. ....	10 @11½	9 @10	18 @19	26 @32	27@32	16@18
May ....	10 @10½	8 @10	16 @18	28 @30	29@32	18@20
June ....	9 @10	8 @9	14 @16	24 @29	30@32	20@22
July ....	9 @10	8 @9	12 @14	24 @26	22@28	20@23
Aug. ....	9 @10	7 @10	10 @12	24½@27	17@20	21@23

## HOP PRODUCTION BY COUNTRIES.

[In thousands of bales of 180 pounds net, American standard.]

Crop of	*1904	1909	1902	1901	1900	1899	1898	1897	1896	1895	1894	1892	1890
Germany ....	265	280	321	190	267	336	268	310	353	368	404	300	164
Austria .....	125	78	122	210	112	132	76	99	136	95	109	79	65
France .....	163	25	21	28	44	48	37	38	43	42	38	44	54
England .....	180	249	193	404	216	411	222	256	281	343	395	257	176
Oth'r c'ntries	40	91	44	..	..	..	..	..	..	..	..	..	..
Total .....	673	723	701	832	639	927	603	703	813	848	946	680	459
U. S. ....	234	205	185	210	208	240	215	225	175	292	320	223	205
Aggregate..	907	928	896	1042	847	1167	818	903	988	1140	1266	903	664

\*American Agriculturist's preliminary estimate. This journal is an accepted authority on America's hop crop, but it frankly admits this crop is one of the most difficult to report upon, for obvious reasons. Figures of each crop are subject to final revision at the close of each year, when data are available of the interior and foreign movement. † Includes Belgium.



## HOP CROP OF THE WORLD.

In the following table are given for a long series of years the bales of hops produced each season in the United States and in Europe (including England), the total constituting about 95% of the world's supply. It also shows the number of bales of each crop exported from the United States, and the imports of foreign hops into the United States, with average yearly United States export prices.

## HOP CROPS AND PRICES.

[In thousands of bales of 180 pounds net.]

†Crop of	U. S. crop	European crop	Total crop	U. S. exp'ts	U. S. imp'ts	Average export price *U. S.
1904 .....	234	673	907	—	—	—
1903 .....	205	723	928	61	15	19.2
1902 .....	195	701	896	43	33	24.6
1901 .....	210	832	1042	60	16	14.5
1900 .....	208	630	847	83	15	16.5
1899 .....	240	927	1167	70	14	13.5
1898 .....	215	603	818	117	7	17.1
1897 .....	225	703	928	95	13	15.4
1896 .....	175	813	988	63	17	10.2
1894 .....	320	946	1266	97	17	10.7
1892 .....	223	680	903	63	15	23.7
1890 .....	205	459	664	49	21	26.6
1889 .....	218	717	935	42	36	29.0
1886 .....	—	—	—	1	103	21.0
1882 .....	125	387	512	43	12	71.8
1879 .....	95	379	474	54	—	26.3
1874 .....	110	428	538	17	—	41.9
Average 1881-1890 ...	193	746	939	—	—	150.1
1885-1889 .....	190	773	963	—	—	120.7
1881-1885 .....	196	720	916	—	—	150.1
1876-1880 .....	152	647	799	—	—	130.0

\* Average annual export value (in cents per pound) of hops shipped from the United States. † Observe that the year given is that in which the crop was produced; therefore, exports from the United States of the 1904 crop will not be known until July, 1905. ‡ Highest average annual import value of hops imported into Hamburg during the period noted.

## Onions

### THE COMMERCIAL ONION CROP.

On many northern farms, onion growing is being followed on a commercial scale, and in the past year Texas and other parts of the southwest have also given this crop attention. While not a staple crop in the same sense as potatoes and apples, the onion is being given wide attention in a number of states. To successfully grow onions for autumn and winter markets is little less than a trade, owing to the many ins and outs in the way of character of soil, handling the seed, cultivation, battling insect and fungous pests, harvesting and marketing the crop. Much hand labor is involved in the proper cultivation, even in a large way. There is also great risk in growing onions through unfavorable climatic conditions and the ravages of insects.

The commercial onion belt has expanded somewhat in recent years. For a long time this crop was grown chiefly in New York, Massachusetts, Connecticut, Ohio and Michigan. The specialty was later firmly established in parts of Wisconsin and more recently in Indiana. Outside of the states named, onions are grown in considerable quantities in a few counties in Texas, Illinois, Iowa, Kansas, Nebraska, etc. The growing of onion sets is quite a specialty in Indiana, Ohio and Pennsylvania. While the onion industry is gradually expanding, the acreage remains much the same from year to year, fluctuating with price and conditions.

The red and yellow standard varieties are being grown more extensively than others and form the bulk of the crop. The white onion is a specialty among farmers along the north coast of Long Island sound in Connecticut. The rate of yield per acre varies greatly, according to character of the soil, weather and attention, given the crop. Intensive cultivation under propitious surroundings frequently returns a yield of 600 bushels per acre, and occasionally small tracts yield at the rate of 800 to 900 bushels, or possibly more. The average yield in 1903 on an estimated acreage was 240 bushels per acre, against 300 bushels in 1902, but in 1904 the acreage and yields showed a slight increase, the average being 266 bushels per acre. The yield is highest where the crop is held in greatest esteem, and where the most intelligent attention is given it; notably the Connecticut valley, central New York, northern Ohio, etc.

Growers find that onions keep well when properly handled, and in handling the harvest crop they are careful that

but a small portion remains on hand until spring. Often serious loss occurs through natural shrinkage, rot and sprouting. Growers making a business of this crop hold no uniform views as to best time of selling, being guided by market conditions. If the price is high in the fall, the chances are the bulk of the crop leaves first hands early; if unfavorable, growers often prefer to store and hold rather than sell direct from the harvest field. The crop is bought largely by city dealers and speculators, who send their agents through the onion belt, buying, shipping and storing, with a view of realizing a profit later in the season. Dampness and warmth hasten the decay of onions, and fear of this often impels farmers to sell early, even at relatively low prices. The crop is practically all consumed at home. A small quantity is exported, while imports are considerable. As a rule, the foreign onions coming to this country are fancy varieties from Spain and Bermuda. In an occasional short year liberal quantities are imported from Egypt.

#### THE ONION CROP OF 1904.

Exceeded in occasional years of plenty, the commercial onion crop of 1904 was after all a generally good one. It would have been much larger but for the development of serious damage in New York, and to a smaller extent in portions of the west and in New England. What may be considered the commercial crop, i. e., onions which are in sight for the big distributing markets, approximated 3,300,000 bushels, 10% increase over one year ago, but smaller than two years ago. The area finally brought to harvest in the commercial onion belt, estimated at 12,320 acres, was slightly under that of a year ago. As to quality of the onions, this was variable. Practically every section had some good onions, here and there splendid crops, but advices frequently indicated disappointing size and quality of the bulbs. The rate of yield was excellent in many counties outside the damage district, especially where farmers fully understand the ins and outs of growing onions. While the estimated average rate of yield for the entire country was 266 bushels to the acre, in a considerable number of instances crops made 400 to 500 bushels.

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## ONION PRICES AND FOREIGN MOVEMENT

For a series of years.

Crop of	Bushels	Price per bushel at New York			Exports, Imports,	
		Oct.	Jan.	Apr.	bushels	bushels
1904-5	3,288,000	\$0.75@1.00	\$1.00@1.25	—	—	—
1903-4	3,090,000	.50@ .70	.70@ .90	\$1.00@1.50	144,764	1,171,242
1902-3	3,822,000	.50@ .90	.50@ .90	.35@ .75	145,509	915,599
1901-2	2,990,000	.80@1.10	1.20@1.60	1.20@1.80	113,531	796,315
1900-1	3,738,000	.50@ .60	1.00@1.20	1.20@1.60	165,391	773,306
1899-00	4,615,000	.40@ .50	.40@ .70	.70@ .85	171,636	546,705
1898-99	3,100,000	.40@ .70	.60@ .90	.80@1.20	164,902	771,960
1897-98	2,800,000	.40@1.00	1.00@1.40	.60@1.10	100,148	488,863
1896-97	2,818,000	.20@ .70	.80@1.10	—	73,511	560,134
1895-96	2,973,000	.25@ .60	.20@ .50	.30@ .60	2,916	—
1894-95	1,944,000	.60@ .70	.50@ .80	.80@1.20	53,335	—
1893-94	2,330,000	.50@ .80	.50@ .75	.30@ .60	—	—
1892-93	2,600,000	.60@1.00	.60@1.00	.80@1.40	—	—
1891-92	3,200,000	.40@ .70	.80@1.00	.60@1.10	—	—

So far as what is known as the commercial onion crop is concerned, this is grown on approximately 13,000 to 14,000 acres. The federal census of 1900 placed the area under onions at 24,282 acres. This, however, included a very large number of patches only one-eighth to one-quarter acre, etc., which served to swell the aggregate, but did not affect the commercial crop as a whole. This annually approximates 3,000,000 to 4,000,000 bushels.

## THE COMMERCIAL CROP OF ONIONS OF UNITED STATES.

Crop of	Number of acres in crop					Yield in thousands of bushels				
	1904	1903	1902	1901	1900	1904	1903	1902	1901	1900
Massachusetts	1320	1260	1200	1025	1065	360	300	432	300	280
Southport (Ct.) dist.	900	1000	950	1000	1000	202	135	323	215	250
Other Connecticut	300	300	350	425	450	63	78	114	251	113
Rhode Island	250	250	250	200	190	50	62	69	45	38
Orange Co., N. Y.	1700	1850	1800	1800	1500	510	300	720	405	585
Other New York	1550	1900	1950	—	—	325	490	439	400	—
Pennsylvania	350	350	300	—	—	75	70	67	65	—
Ohio	2700	2650	2700	2400	2600	877	860	1053	744	945
Illinois	900	800	800	650	700	202	200	160	163	227
Indiana	900	900	850	—	—	270	225	127	150	—
Michigan	850	950	950	—	—	204	214	143	187	—
Wisconsin	600	650	650	700	900	150	156	146	125	315
Total	12320	12860	12750	11040	11150	3288	3090	3794	3050	3700

## *Grass Seeds*

### THE LEADING GRASS SEEDS.

Timothy and clover seed for market are grown in the north central states, while small amounts are produced throughout many northern states. In a considerable number of isolated sections, often including a whole county, farmers have built up quite an industry in growing these grasses for the seed. Most of the timothy and clover seed available for domestic and foreign markets is produced in the north central states; next to nothing as far east as New England, and only small quantities east of Indiana and Michigan, both important producers.

The proportion of the grass crops set aside for seed depends somewhat upon the condition of the seed markets. But taking a long series of years, certain states which originally secured large crops now direct their attention to other things. This is particularly true of clover. The territory north of the Ohio river and extending west to the Missouri river forms the clover and timothy seed belt. The crop of alfalfa, or "lucerne," as it is called in Europe, is grown chiefly in the semi-arid belt of the west and the rich valleys of the Rocky mountain and Pacific coast country. But in the last five years alfalfa has become a highly favored crop (not for seed purposes) in eastern Kansas and Nebraska, in portions of the Mississippi valley, and as far east, in rather more than an experimental way, as New York. Hungarian and the millets are favorite catch crops, but no considerable quantities of these grasses are raised and threshed for seed.

### SEED EXPORTS HIGHLY IMPORTANT.

In order to find favor in foreign markets it is very important to keep the crop of grass seed free from weed seeds. After home requirements are made up there is always an export surplus of both clover and timothy, and the price of every bushel of seed grown depends largely upon the character of the foreign demand. Germany and the United Kingdom are the largest European buyers, although there are some exports direct to France and other parts of the continent. Our trade with Canada is perhaps more important than all, especially so far as timothy is concerned.

AMERICAN AGRICULTURIST  
EXPORTS OF GRASS SEEDS.

Yr. ended June 30	Clover			Timothy		
	Pounds	Total value	Av. value	Pounds	Total value	Av. val.
1904	6,440,618	\$600,626	9.3c	12,672,676	\$480,946	3.7c
1903	15,522,527	1,549,687	9.9	18,289,917	853,829	4.7
1902	7,256,573	594,733	8.0	5,966,986	373,046	6.6
1901	11,998,674	1,063,506	8.8	7,275,806	296,640	4.1
1900	32,069,371	2,379,372	7.4	15,078,186	505,758	3.3
1899	19,980,434	1,264,922	6.3	16,149,611	492,710	3.0
1898	31,155,381	1,892,101	6.7	10,238,780	317,173	3.1
1897	13,042,994	1,003,157	7.7	16,733,993	574,457	3.4
1896	5,539,787	437,493	7.8	11,894,536	518,755	4.3
1895	22,900,672	2,124,997	9.3	4,939,237	277,160	5.6
1894	45,418,663	4,540,851	10.0	10,155,867	449,207	4.4
1893	8,189,553	988,029	12.1	7,077,131	504,937	7.1
1892	19,532,411	1,636,671	8.4	10,318,074	381,651	3.7
1891	20,773,884	1,575,039	7.6	8,757,788	370,151	4.2
1890	26,500,578	1,762,034	6.6	11,051,053	473,770	4.2
1889	34,253,137	3,110,583	9.1	10,200,673	451,728	4.4
1888	13,357,899	1,009,695	7.5	2,097,197	117,677	5.6
1887	7,932,390	630,850	7.9	6,500,004	281,048	4.3
1886	2,652,438	264,882	9.9	4,023,937	175,754	4.3
1885	17,653,112	1,525,283	8.6	3,830,737	157,444	4.1

RANGE OF PRICES OF GRASS SEEDS AT CHICAGO.

[Per 100 pounds for prime quality.]

Year	Clover			Timothy			Hungarian		Ger. millet	
	Jan. 1	Mar. 1	Oct. 1	Jan. 1	Mar. 1	Oct. 1	Mar. 1	Oct. 1	Mar. 1	Oct. 1
1904	\$11.00	\$10.90	\$11.75	\$2.90	\$3.15	\$2.80	\$1.85	\$1.25	\$1.30	\$1.20
1903	11.00	11.80	10.60	4.25	3.75	2.90	1.60	1.00	1.15	1.00
1902	9.50	8.75	9.50	6.45	6.35	3.75	1.75	1.25	2.00	1.00
1901	10.25	10.75	8.25	4.75	4.40	5.35	1.10	1.00	1.20	1.10
1900	8.00	8.25	10.00	2.65	2.50	4.60	.85	.75	1.20	1.10
1899	7.00	6.10	8.50	2.25	2.40	2.35	.85	.60	1.25	.85
1898	5.35	5.15	7.25	2.40	3.00	2.20	1.00	.60	1.10	.80
1897	8.25	7.50	5.30	2.70	2.65	2.77	.60	.65	.75	.80
1896	7.25	7.40	8.25	3.60	3.60	2.55	.80	.60	.85	.60
1895	9.10	9.00	7.00	5.52	5.80	4.35	1.65	.80	1.65	.80
1894	10.75	8.85	8.50	4.35	4.10	5.20	1.90	1.25	1.00	1.25
1893	13.33	13.12	9.25	4.50	4.44	3.20	2.10	1.10	1.60	—
1892	9.16	10.00	10.25	2.73	2.80	3.44	1.10	1.20	1.30	1.20
1891	7.00	7.46	7.16	2.77	2.82	2.77	1.10	.80	1.50	1.00
1890	5.66	5.33	6.83	2.64	2.71	2.95	.70	.90	.80	.80

## *Flaxseed*

### FLAXSEED PRODUCTION OF THE UNITED STATES.

This crop may be called a specialty of the northwest, for Minnesota and the Dakotas produce more than half the output of the entire country. Other western states, a little further south, seem to be losing ground of late in regard to flax cultivation. However, the industry is quite important in southeastern Kansas and parts of Iowa, Missouri, Wisconsin and Nebraska. The flaxseed acreage from year to year is governed largely by prices.

The Chicago range of flaxseed quotations, for No. 1 northwestern, during 1903, was 89 cents to \$1.24 per bushel. Toward the close of 1904 prices were \$1.15 to \$1.20. In 1901 flaxseed sold up to \$1.90 on the Chicago market, while in the summer of 1896 quotations dropped to 63 cents. Exports of flaxseed from the United States the past ten years ranged mostly from 2,000,000 to 4,000,000 bushels per annum. In 1903-4, however, the movement abroad aggregated only 768,000 bushels. The accompanying table shows the flaxseed crop of the United States in recent years, the acreage and the yield per acre. These figures from American Agriculturist's special crop reports.

#### FLAXSEED CROPS OF THE UNITED STATES.

Year	Acres	Yield in bus.	Bus. per acre
1904 .....	2,275,000	22,190,000	9.8
1903 .....	3,159,000	26,639,000	8.4
1902 .....	3,401,000	29,351,000	8.7
1901 .....	3,050,000	29,079,000	9.5
1900 .....	2,525,000	23,412,000	9.0
1899 .....	1,679,000	20,086,000	12.0
1898 .....	1,553,000	17,217,000	11.1
1897 .....	1,130,000	10,891,000	9.6
1896 .....	1,145,000	17,402,000	11.3

## *Broom Corn*

### THE BROOM CORN INDUSTRY.

Inconsiderable amounts of broom corn for local or foreign use are grown in a number of states, the plant thriving under various climatic conditions and in varied soils. The bulk of the commercial product, however, is grown in but

few states, chiefly Kansas, Oklahoma, Illinois and Nebraska. Until the season of 1904, Kansas and Illinois were the leading states, while Nebraska came third and Oklahoma produced a much smaller amount. This year, as a result of a combination of a number of conditions, Oklahoma came to the front rank with a larger acreage and almost as large a production as Kansas, while Illinois fell off considerably and other sections remained about the same.

The large increase in Oklahoma was mostly due to the substitution of broom corn for abandoned wheat, which was destroyed by the severe freezes in the winter of 1903-4. The soil in Oklahoma is particularly adapted to growing large yields of the crop. But owing to the fact that the business is new to the farmers, the product has been put on the market in irregular, and, at times, very poor condition.

In Illinois practically all of the commercial crop is produced in the counties of Coles, Edgar and Douglas; this has been true for many years. During the past season weather was unfavorable to the growth and harvesting of the crop, which was considerably damaged in that section. For years Illinois furnished the great bulk of the commercial product, but during the past three or four years leading growers have apparently lost interest and cut their acreage down very low. The production in Kansas increased yearly until 1903, when the total output fell off about 2,000,000 pounds; 1904, however, shows a return to almost normal production. In Nebraska the crop is largely confined to a belt of counties lying south of the Platte river and west of Hastings, but the state's total output is comparatively small and of relatively slight importance.

#### BROOM CORN ACREAGE AND YIELD, BY STATES.

Crop of	1904			1903			1902		
	Acres	Yld	Lbs	Acres	Yld	Lbs	Acres	Yld	Lbs
Kan. ...	32,500	425	14,812,000	29,640	450	13,338,000	37,050	410	15,190,500
Okla. ...	45,000	310	13,950,000	20,000	300	6,000,000	—	—	—
Ill. ....	16,000	525	8,400,000	17,500	550	9,625,000	25,600	710	18,105,000
Neb. ...	6,000	475	2,850,000	4,800	500	1,400,000	8,000	500	4,000,000
Others ..	2,000	400	800,000	2,000	420	840,000	5,775	425	2,454,000
Total..	101,500	404	40,812,000	73,940	422	31,203,000	75,825	524	39,749,500

While nearly all of the broom corn crop is consumed at home, moderate quantities, both in raw and manufactured



state, are annually shipped abroad. Aside from the manufacture of brooms of various sizes, its uses are few; probably the chief one being for artificial stems for flowers by florists. The chief export is to Canada, with a fair amount to Cuba, Germany, Australasia and South America. Prices vary widely from year to year, and even in the same year, as will be seen by referring to accompanying table.

## BROOM CORN PRICES PER TON AT CHICAGO.

Month	1904	1903	1902	1901	1900	1897	1896	1895	1894	1893	1890
January	\$70	\$50	\$100	\$60	\$170	\$60	\$40	\$90	\$65	\$100	\$115
	120	100	170	110	200	70	—	110	70	110	130
February	80	50	100	60	165	60	40	90	60	100	115
	120	95	170	110	200	70	—	110	70	110	120
March	70	50	80	60	165	60	45	90	60	100	115
	120	95	160	110	200	70	50	110	70	110	125
April	70	50	80	50	165	60	45	90	60	100	115
	120	95	160	100	200	70	50	110	70	110	125
May	80	50	80	50	165	60	45	90	60	100	115
	125	95	160	100	200	70	50	110	70	—	125
June	70	60	80	50	165	60	45	90	60	100	115
	120	90	160	100	200	70	50	110	70	—	125
July	70	45	80	60	150	60	45	90	60	100	110
	120	110	170	160	200	70	50	110	70	—	130
August	75	55	80	60	150	60	45	70	70	100	110
	120	100	170	120	200	70	50	80	80	—	120
September	70	55	70	75	110	60	45	70	80	90	110
	100	100	125	120	160	70	50	80	90	—	120
October	60	55	60	75	70	70	60	60	100	80	90
	100	120	115	150	120	80	70	65	110	90	105
November	60	110	60	100	60	70	60	45	90	75	90
	100	125	115	180	110	80	70	50	110	—	100
December	65	105	50	100	60	70	60	45	90	65	90
	110	120	115	170	110	80	70	—	110	70	—

## HOW TO GET A GOVERNMENT POSITION.

A manual of complete information respecting civil service examinations and appointments, and an application paper for the departmental service at Washington, the railway mail service, the Indian school service, and the government printing service, can be obtained upon request made directly to the commission at Washington. Requests for information and application blanks for the customs, postal, internal revenue and other services should be made to the board of examiners at the office or in the district where the position is sought.

## Beans

### THE FIELD BEAN CROP.

The growing of field beans on a commercial scale is slowly increasing in popularity among farmers. With the exception of small areas, the production is confined chiefly to a few states, notably Michigan, New York and California, in the order named. In the federal census of 1900, Michigan had the first place, with 167,000 acres credited to that crop, compared with 129,000 in New York. A considerable acreage is found in Maine, and some attention is also devoted to field beans in other northern states. The annual crop of the United States approximates 4,000,000 bushels, and has shown some gain in the last ten years.

The rate of yield of beans averages 10 to 20 bushels per acre, while much larger yields are frequently harvested. In New York, the bean section is confined chiefly to a number of counties in the western part of the state, including Orleans, Monroe, Livingston, Genesee and Wyoming. In California, Ventura is the leader, other important bean producing counties being Santa Barbara and Sacramento. The crop is fairly well distributed in central and southern Michigan, including such counties as Livingston, Van Buren and Jackson.

There would seem to be fair reason for encouragement in the production of this crop, as the annual yield is materially under domestic requirements. Exports of beans form a considerable total, in some years closely crowding 1,000,000 bushels, but usually nearer half that. On the other hand, imports are very much greater, in some recent years materially exceeding 1,000,000 bushels.

Navy or hand picked pea beans are perhaps the standard in regulating market prices. Several varieties may be found in any of the general markets. Prices have maintained a fairly satisfactory level since the low period of the late 90's, when pea beans sold in Chicago as low as 72 cents a bushel. During most of 1904 the market has ranged at \$1.75 to \$2.25. The accompanying table deals exclusively with dried beans for table purposes, including such varieties as navy, pea, lima, etc. The rate of duty on foreign beans is 40 cents a bushel.

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In writing to the advertiser say: "I saw your adv in one of the old reliable American Agriculturist weeklies."

## DOMESTIC PRICES, IMPORTS AND EXPORTS OF BEANS.

Year	Price of pea beans per bushel				Foreign trade in beans			
	Chicago		New York		Exports		Imports	
	Nov. 1	May 1	Nov. 1	May 1	Bushels	Av. val.	Bushels	Av. val.
1904-5	.....\$1.75	—	\$1.85	—	*†52,994	\$2.47	*†107,231	\$1.24
1903-4	..... 2.00	\$1.80	2.15	\$1.85	*248,805	2.19	629,118	1.24
1902-3	..... 2.30	2.10	2.45	2.25	232,841	2.28	1,088,468	1.20
1901-2	..... 1.92	1.85	2.05	1.85	324,481	1.90	881,966	1.30
1900-1	..... 1.87	1.90	2.05	2.10	468,670	1.84	1,090,640	1.18
1899-0	..... 1.85	2.18	1.89	2.25	617,355	1.59	967,031	1.08
1898-9	..... 1.15	1.20	1.27	1.32	883,201	1.43	184,499	.89
1897-8	..... 1.00	1.30	1.13	1.41	854,284	1.28	163,560	.91
1896-7	..... .98	.72	1.25	.90	900,219	1.23	482,986	1.01
1895-6	..... 1.25	.94	1.25	1.18	473,975	1.33	613,801	1.07
1894-5	..... 1.52	1.75	1.85	2.05	242,680	1.76	1,535,960	1.00
1893-4	..... 1.80	1.75	1.90	2.00	326,748	1.74	1,184,081	.94
1892-3	..... 2.00	2.05	2.10	1.95	389,913	1.91	1,754,943	.99
1891-2	..... 1.80	1.75	2.00	1.65	637,972	1.39	874,050	1.09
1890-1	..... 2.25	2.30	2.40	2.35	251,063	1.88	1,656,768	1.25
1889-0	..... 1.75	1.80	2.00	1.95	261,212	2.13	1,250,287	1.04
1888-9	..... —	—	2.05	1.70	294,456	1.90	765,483	1.02
1887-8	..... —	—	2.25	2.90	253,170	1.83	1,942,864	1.12
1886-7	..... —	—	1.70	1.65	387,222	1.45	648,388	.93
1885-6	..... —	—	2.00	1.30	408,318	1.39	649,002	.90
1884-5	..... —	—	1.85	1.60	271,044	1.92	284,770	.89

\* Beans and peas. † Three months ended September 30, 1904.

## CASTOR BEAN CROP.

Castor beans for commercial purposes are grown principally in a strip of country beginning in southern Illinois and extending across Missouri into eastern Kansas. Small amounts are grown in other localities, notably parts of Oklahoma and Nebraska. The annual yield is 100,000 to 200,000 bushels, practically all consumed by a few crushers located at St. Louis. It is a question whether the acreage annually devoted to castor beans could be very largely increased and still permit sale at remunerative prices. In many instances growers consider castor beans a better paying crop than grain, and would be satisfied with \$1.25 per bushel, a figure occasionally touched, although one year with another the price remains close to \$1 per bushel to farmers. The market is dependent largely upon the actions of the castor oil combina.

The American output of castor oil is insufficient to meet trade requirements and a considerable amount is imported

yearly. Furthermore, the amount of beans imported is rapidly increasing. In 1897 there were 84,128 bushels imported; in 1900, 135,590 bushels, and in 1904, 498,039 bushels. It will be seen that in the past seven years the imports of beans have grown immensely. From 45 to 47% of the weight of the bean is oil, which is obtained by expression. In Florida and other warm countries the castor bean is a perennial, growing to a height of 30 to 50 feet; and in colder climates, it is an annual, flourishing in latitude 35 to 40 degrees, and would no doubt do well in the middle south and west. The yield varies greatly, often 10 to 12 bushels (of 46 pounds) per acre, occasionally up to 15 or 20. The pomace is considered valuable for fertilizing purposes.

#### IMPORTS CASTOR BEANS AND CASTOR OIL.

Year ended June 30	Castor beans				Castor oil			
	Bushels	Value	Av. value	Duty	Gallons	Value	Av. val.	Duty
1904	498,039	\$430,891	\$0.86	25c	10,745	\$1,790	\$0.44	35c
1903	380,270	357,889	.94	25	6,643	3,635	.54	35
1902	312,323	366,901	1.17	25	3,993	3,227	.80	35
1901	191,288	255,594	1.33	25	3,668	2,575	.70	35
1900	135,590	169,592	1.25	25	3,489	2,048	.58	35
1899	25,003	29,169	1.16	25	8,106	3,470	.42	35
1898	19,651	23,876	1.25	25	4,128	2,987	.72	35
1897	84,128	93,151	1.11	25	4,368	1,829	.42	35
1896	145,725	117,945	.81	25	23,574	8,461	.36	35
1895	277,231	215,360	.81	25	33,636	11,892	.35	35
1894	47,448	41,931	.88	50	4,256	1,654	.39	80
1893	147,061	148,904	1.01	50	1,518	712	.47	80
1892	163,089	160,919	.98	50	2,284	973	.43	80

### *The Peppermint Crop*

Peppermint is grown extensively in isolated portions of the United States for its essential oil, largely used in medicine and the manufacture of candy. The prosperity of this small branch of farming, or the periods of depression, depend entirely upon the price of peppermint oil. After a long stretch of high prices, the level a few years ago sank so low that the business was unprofitable, and many farmers quit the cultivation of the peppermint plant. In the last two or three years the price of oil has ruled higher, and more attention is now given the industry.

The area given over to peppermint farming was originally restricted to New York, chiefly Wayne county, but the peppermint belt has moved westward and to-day the industry centers in a few counties in southern Michigan and northern Indiana. Farmers in Wayne county, N. Y., look upon the crop with a little more favor than five years ago. Efforts during the last two or three years to produce the oil west of the Rocky mountains were quite successful in an experimental way, but the output from that source does not affect the commercial supply. Texas and other parts of the south are also experimenting with mint.

The amount of oil produced in the United States is in excess of home requirements, and the surplus is marketed in Europe, where it finds ready sale. The rapid development of the industry in Japan in the past ten years results in a big surplus there, and this is also shipped to European markets, competing sharply with the United States product. England and Germany and a few other countries also produce a small amount.

#### YIELD OF OIL AND PRODUCTION.

When the plant has reached the proper stage of development, the crop is cut and the oil distilled. The yield varies greatly, according to the age and condition of the plants and to the favorableness of the weather. New fields, if in prime condition, when harvested, will yield at the rate of 30 pounds of oil per acre, or possibly more, while from old plants only half that amount can be expected. The acreage of "black mint" is increasing, although the oil commands much lower figures than regular stock. The so-called black or English mint produces larger yields, often averaging 75 pounds of oil to the acre.

The total output for the United States is 200,000 to 250,000 pounds annually. The export trade has fallen off during the past five or six years very perceptibly, due to small surplus and attendant high prices in the United States. In 1897 there was 162,492 pounds of oil exported, while in 1903 the movement was but 13,033 pounds. In 1904, however, exports rose to 42,939 pounds, due to an increased acreage. Owing to good prices obtained in 1902, Japan put out a large acreage for 1903, with the result that that year's distillation was over 300,000 pounds of oil. Again in 1904 their crop was large. The Japanese oil is of poorer quality than the American, and the admixture of the two frequently brought about

much trouble. However, this adulteration is now quite easily detected by specific gravity and other means.

Prices of oil are much more satisfactory to producers now than in the late '90's, when the market suffered a severe slump. Oil then sold down to a figure as low as 75 cents to \$1.25 per pound. In the winter of 1903-4 the market was \$2.50 to \$2.60 per pound, and in the summer and autumn of 1904 prices in the principal markets reached \$3.50 to \$4 per pound, due to the decreased acreage and the discouraging condition of the crop of 1904. According to the New York Oil, Paint and Drug Reporter, a price as high as \$4.37½ per pound was reached in 1885, while ten years earlier a figure as high as \$5.50 was barely touched. In the early '70's, prices were largely \$2.75 to \$3.75, and in the early '80's, \$2.25 to \$3.

#### PEPPERMINT OIL EXPORTS FROM THE UNITED STATES.

[Year ended June 30.]

	1904	1903	1902	1901	1900	1898	1896
Pounds .....	42,939	13,033	36,301	60,166	89,558	145,375	85,290
Value .....	\$124,728	\$34,943	\$54,898	\$63,672	\$90,298	\$180,811	\$174,810
Average value.	\$2.90	\$2.68	\$1.51	\$1.05	\$1.01	\$1.24	\$2.05

### *The Cranberry Crop*

Over nine-tenths of the cranberries grown in the United States are produced in Massachusetts, New Jersey and Wisconsin. Rhode Island, Connecticut, New York and Michigan are small producers. The heavy counties of Massachusetts are Plymouth and Barnstable, constituting Cape Cod. The chief counties of New Jersey are Burlington, Ocean, Atlantic, Camden and Monmouth. Canada has a few extensive marshes, but the conditions are generally unfavorable for the industry.

A normal crop is considered to be about 1,000,000 bushels. The acreage is slowly increasing in most of the leading states. In 1891 there were 760,000 bushels harvested, in 1893 1,000,000, in 1897 415,000, in 1901 950,000, in 1903 935,000 bushels. In the states where mostly grown, the size of the package is regulated by law. In Massachusetts, New Jersey and Wisconsin, the crate must hold one bushel, or 32 quarts dry measure. New Jersey law provides that the standard crate shall be 7½x12x22 inches, capacity 1980 cubic inches, with the barrel three times a crate, or containing 96 quarts. The Massachusetts barrel is 100-quarts.

Practically none of the cranberry crop is exported. Efforts were made a few years ago, mostly by New Jersey growers, to build up an export trade, but nothing of consequence has ever been accomplished. An ad valorem duty of 25% is placed upon foreign cranberries, which serves to shut out shipments from Canada.

## CRANBERRY CROPS AND MARKETS, BY YEARS.

Crop of	Crop in bushels				Boston price per bushel		
	New England	New Jersey	West	Total	October	January	May
1904	450,000	240,000	75,000	765,000	\$2.00	\$2.50	—
1903	425,000	410,000	100,000	935,000	2.25	2.50	—
1902	410,000	135,000	130,000	675,000	2.00	3.00	—
1901	540,000	300,000	110,000	950,000	2.00	2.00	—
1900	475,000	250,000	75,000	800,000	1.75	3.00	—
1899	600,000	240,000	120,000	960,000	1.50	2.00	—
1898	425,000	350,000	100,000	875,000	1.75	2.00	—
1897	256,000	120,000	50,000	415,000	2.00	2.50	—
1896	380,000	130,000	50,000	560,000	1.75	1.25	\$1.00
1895	420,000	210,000	10,000	640,000	2.50	2.00	2.50
1894	185,000	200,000	25,000	410,000	2.50	3.00	.75
1893	575,000	325,000	100,000	1,000,000	1.50	2.50	3.00
1892	375,000	160,000	65,000	600,000	1.50	2.25	3.00
1891	480,000	250,000	30,000	760,000	2.00	2.25	2.00
1890	375,000	200,000	225,000	800,000	2.25	3.00	3.50
1889	350,000	200,000	70,000	620,000	2.00	3.00	5.00
1888	260,000	225,000	100,000	585,000	2.00	2.25	1.00
1887	306,000	164,000	141,000	611,000	2.00	3.00	3.00
1886	275,000	234,000	31,000	540,000	1.50	2.75	4.00
1885	280,879	198,125	264,432	743,436	1.70	1.40	.75
1884	130,583	124,648	24,783	280,014	3.00	4.75	2.75
1883	141,964	118,524	135,507	395,995	3.00	3.75	5.50
1882	193,664	78,507	50,000	322,171	3.00	4.50	3.50
1881	160,825	157,014	143,186	461,025	2.00	4.00	3.00
1880	250,500	128,700	113,430	492,630	2.00	2.00	1.00

The best soil for the cranberry is a black peat or muck bottom, where plenty of sand is available. It is necessary to insure best results to have a liberal supply of running water. The establishment of a cranberry bog requires a large expenditure of labor and money, and even then the business is hazardous unless thoroughly understood and cared for. The question of drainage is a highly important one. Cranberry vines are flooded in the fall, beginning in October, and this is continued as late as May, when the water is drawn off. This furnishes protection from frosts, and in some degree

from insect pests. Blossoms appear in June and with an ample supply of moisture the fruit ripens in August and September, the harvest continuing into October. The cranberry frequently suffers both in fruit and vine from the ravages of insects and the crop is also subject to damage through fungous diseases and drouth.

Experiments in preventing scald by the use of fungicides have been conducted. The consensus of opinion of experts indicates that bordeaux mixture is the most valuable fungicide for use in combating the cranberry scald, provided it is properly prepared from fresh slaked stone lime, with the addition of resin mixture.

The fruit should be carefully cleaned when harvested, screened and assorted, due attention being given to the process of ripening or coloring previous to placing in barrels and crates. Cold storage for keeping cranberries during early autumn is not generally favored; successful growers prefer to store the fruit in a cool, dry bog house or cellar, disposing of it before the cold weather sets in.

### ***Commercial Truck Growing***

Asparagus is a vegetable which brings fancy prices early in the season, but owing to the rapidity with which the crop develops the market comes to an abrupt drop as soon as a large supply is produced; only fine, perfect stalks should be shipped, neatly tied in bunches of even size and quality, these packed in boxes holding a dozen or more bunches, and well protected by loose, soft paper or moss during transit. A requisite in marketing cauliflower to advantage is to have the heads good size, bright and cream-like in appearance, as wilted or badly stained specimens sell poorly. Long Island is pre-eminent as a grower of cauliflower for market, and producers are fairly well organized to work together to secure best prices.

Chicago and eastern markets demand head lettuce at highest prices, while further west the curled variety is a favorite. These vegetables are best marketed in small barrels. Green peas heat and mold readily, and must be cool and dry when packed and shipped; the one-third-bushel basket is a popular size, and of course the earliest on the market command best prices. String beans are easily handled, but all markets are generally supplied from home gardens after the opening of the season, and shipments from a distance often prove unprofitable. Radishes should be washed and dried, tied in small bunches; pithy roots should be kept at home.



Tomatoes are nowadays upon the market the year around, exclusive of those grown under glass. The southern truck regions are producing large quantities during the winter, which fills in the season not supplied by northern gardens. Beginning with Florida, the season advances rapidly, with a corresponding decline in prices. Only smooth, bright fruit should be marketed, and of course the earlier the better. The earliest varieties, grown in the south, are usually shipped in crates holding six small baskets, but later crops in the one-third-bushel basket, followed by "home grown" in the early autumn, in baskets of one-half and one bushel.

Cabbage is the standard favorite crop of market gardeners. Ship in heads solid in texture, having some of the outside leaves and stems removed, and pack tightly in crates of about one barrel capacity, as the shrinkage is considerable. Celery should be bright, well bleached, and crisp, tied in bunches of about one dozen stalks and packed in boxes of six or 12 dozen each. Honey is not subject to the same price fluctuations common to perishable produce, generally meeting a slow but steady sale. That shipped from Utah and other western states is largely the extracted honey, while eastern producers sell it in the comb, the one-pound frame forming the uniform package, a case holding 12 to 24 of these, usually with a glass front.

#### PACKING AND PACKAGES FOR FRESH FRUITS.

Fruit and vegetables are put on the market in a great variety of packages. The market demands have not as yet been able to establish a uniform package for any of these products. Strawberries are handled in 16-quart, 24-quart and 32-quart cases. Michigan and Wisconsin ship very largely in 16-quart cases; southern Illinois, Arkansas and other parts of the middle south the 24-quart case, northern Ohio and many of the eastern states the 32-quart case, this also finding considerable favor in Florida. Strawberries should not be picked immediately after a heavy rain, as they are liable to reach the market in a soft condition.

Owing to their very perishable nature, red raspberries are usually shipped in cases of 24 pints, while black raspberries are handled in both pints and quarts; blackberries in quart boxes or baskets almost exclusively, these in 24 or 32-quart cases. Gooseberries are handled in the same manner, but should be picked before they begin to turn color.

Peaches are handled as a whole in a less satisfactory manner to producer and consumer than any other variety of fruit. The markets are often flooded with small, hard, unripe specimens, lacking in flavor and other desirable qualities, while at the same time there may be a positive scarcity of this luscious product of the orchard. As a result prices cover an extremely wide range. The styles of package vary greatly. The popular one in the west is the one-fifth-bushel basket, enormous quantities of these being used in Michigan. In the fruit sections of the middle and eastern states, half-bushel and five-eighths-bushel baskets are largely in evidence; early peaches from the south are packed in crates, these usually holding a number of small baskets. This shape was also quite popular in the season of 1904 for peaches grown in the middle states.

Plums are usually marketed in the 24-quart case and in 10-pound baskets. California fruits, so generally recognized for their standard excellence, are shipped in packages of uniform size and shape; grapes in crates containing four and eight baskets of five to seven pounds each, peaches in 20-pound boxes, pears 40-pound boxes, etc. Oranges, both California and Florida, are universally packed in boxes holding 176, 226 and 300, etc.

In the important grape sections of New York, Ohio, Michigan, etc., growers have reduced the picking, packing and marketing to a science. The packages almost universally in use for autumn, when the large crop is marketed, are the eight-pound basket and the four-pound or "pony" size, enormous quantities being shipped every week during the season. Grapes should be handled as little as possible, so as not to disturb the bloom. Pack stem downward, package well filled, so that when the cover is removed, an even, stemless surface is presented. The eight varieties of grapes which appear on the market earliest are as follows: Niagara, Moore's Early, Ives, Hartford, Worden, Champion, Concord and Perkins. First shipments are from Florida, Georgia and Louisiana, followed rapidly by such as Ives from southern Illinois, Indiana and Ohio; then Concord from southern Iowa, Missouri, etc. The first grapes from Michigan are Champion, followed by Ives and Concord from northwestern Ohio. The bulk of Concord, Catawba, late Niagara, Delaware, etc., are from northern Ohio, northwest Pennsylvania and New York state. Large quantities are also grown in the Hudson valley. In the season of 1904 the Michigan grape crop was somewhat short, but good yields in western New York brought the crop average up to about normal.

**HANDLING SMALL FRUITS AND GARDEN TRUCK.**

The small fruit and truck business requires, to assure profitable returns, the greatest care in handling and distributing the finished product. This is particularly true of all perishable products, including fresh vegetables and small fruits. To secure best results to grower and country shipper such goods require the keenest attention from beginning to end. Too often serious loss follows improper handling, and as a result there is no particular profit to anyone, except the transportation company, which gets as much for carrying carelessly packed produce, commanding a low price in market, as for that which reaches its destination in good shape ready for quick sale. In shipping such products as berries, other fresh fruits, and green vegetables, it is important to have them reach the wholesale market at a very early hour in the morning in order to catch the best trade and consequently best prices. Often delayed consignments reaching the market in the middle of the day, or in the afternoon, must sell at very low figures, or go over to another day, and in the latter case may appear to poor advantage.

The attractiveness of the product has a very important influence upon its sale. Berries should be placed on the market in fresh, clean boxes or baskets, packages free from inferior, damaged or overripe fruit, and such vegetables as radishes, young onions, carrots, parsnips, lettuce, etc., should be washed clean and present a bright, fresh, crisp appearance. Study the markets to which you expect to ship, and place your goods thereon in uniform approved packages, "honest count, weight and measure," etc. The shipper who is disposed to "face" his small fruit or vegetables in baskets, boxes or barrels, is always found out; on the other hand, honesty of packing and high quality mean quick appreciation.

**FIVE DECADES OF AMERICAN CROPS.**

In most instances the area given over to the great staple crops keeps pace with the growth of population in the United States, yet there is no overproduction in the main. While the general tendency in the great field staples is toward an increased crop production, the home requirements are each year greater, and under fairly favorable conditions the surplus will find a ready market abroad. In the following table showing principal United States farm crops in round millions of bushels, bales and tons, the figures for the years

1895 to 1904 inclusive are taken from American Agriculturist, with the exception of cotton and buckwheat, these trade estimates. The returns for 1860 to 1894 inclusive are mostly from the United States department of agriculture.

PRODUCTION PRINCIPAL FARM CROPS BY YEARS.

Crop of	Cotton, bales	Wheat, bushels	Corn, bushels	Oats, bushels	Rye, bushels	Barley, bushels	Buckwh't, bushels	Potatoes, bushels	Hay, tons
1904	12.	554	2574	973	30	144	15	289	58
1903	10.1	703	2346	823	32	139	15	255	58
1902	10.7	760	2556	1028	34	138	15	272	60
1901	10.7	752	1419	700	30	110	15	183	51
1900	10.4	510	2188	832	24	59	10	255	52
1899	9.1	565	2207	869	24	73	11	243	59
1898	11.1	715	1868	799	26	56	12	204	68
1897	10.	589	1823	814	—	—	14	174	67
1896	8.5	470	2269	714	24	70	15	245	59.
1895	7.2	460	2272	904	27	87	13	286	48
1894	9.5	460	1213	662	27	61	12	171	55
1893	7.5	396	1619	639	27	70	*	183	66
1892	16.7	516	1628	661	*	*	*	*	*
1891	19.	612	2060	738	*	*	*	*	*
1890	18.7	399	1490	524	29	*	*	*	*
1889	7.5	491	2113	751	28	*	12	*	*
1888	6.9	416	1987	701	28	64	11	202	47
1887	7.	456	1456	660	21	57	12	134	41
1886	6.3	457	1665	624	24	59	11	168	42
1885	6.6	357	1936	629	27	58	13	175	45
1884	5.7	513	1795	584	29	61	11	191	48
1883	5.7	421	1551	571	28	50	8	208	47
1882	7.	504	1617	488	30	49	11	171	38
1881	15.5	383	1195	416	21	41	9	109	35
1880	5.7	499	1717	418	25	45	15	168	32
1877	14.8	364	1343	406	21	34	10	170	32
1875	14.6	292	1321	354	18	57	10	167	28
1873	14.1	281	932	270	15	32	8	106	25
1870	13.	236	1094	247	15	26	10	115	25
1865	0.3	149	704	225	20	11	18	101	24
1860	4.9	173	839	173	21	16	18	111	19

\* No estimate for year indicated by asterisk. † Crop of preceding year. ‡ Commercial estimates.

No advertisement is allowed in the columns of the American Agriculturist weeklies unless we believe that any subscriber can safely do business with the advertiser.

IMPORTS GRAIN AND COTTON INTO UNITED KINGDOM.

[Stated in round millions.]

Calendar year	Wheat, cwts.	Flour, cwts.	Barley, cwts.	Oats, cwts.	Corn, cwts.	Peas, cwts.	Beans, cwts.	Cotton, ton.
1904*	80	12	23	12	37	2	2	11
1903	88	20	26	16	50	2	2	16
1902	81	19	25	16	44	2	2	16
1901	70	23	22	22	51	2	2	16
1900	69	22	17	20	54	2	2	16
1899	67	23	17	16	63	3	2	15
1898	65	21	24	16	57	2	2	19
1897	63	19	19	16	54	3	3	15
1896	70	21	22	18	52	3	3	16
1895	82	18	24	16	34	2	4	16
1894	70	19	31	15	35	2	5	16
1893	65	20	23	14	33	2	4	13
1892	65	22	14	16	35	3	4	16
1891	66	17	17	17	27	2	4	18
1890	60	16	17	13	43	2	3	16
1889	59	15	17	16	36	2	4	17
1888	57	17	21	19	25	2	3	15
1887	56	18	14	14	31	3	2	16
1886	47	15	14	13	31	2	3	15
1885	61	16	15	13	32	2	4	13
1883	64	16	16	15	32	2	4	15
1881	57	11	10	10	33	2	2	15

\* Ten months ended October 31.

PRICES FOR THE YEAR 1904.

	Boston				New York	
	Jan. 1	Apr. 1	July 1	Oct. 1	Jan. 1	Apr. 1
Sweet potatoes, p bbl.	\$3.50	\$3.50	—	\$2.25	\$3.50	\$4.50
Beets, p bbl.	3.00	3.00	†51.40	1.00	3.00	4.00
Celery, p doz bchs.	.50	.75	—	.50	.50	.75
Cabbage, p bbl.	2.25	3.50	1.75	1.00	2.50	3.75
Cauliflower, p doz.	1.65	1.50	—	*3.25	1.75	1.50
Turnips, p bbl.	1.20	1.25	1.50	.80	1.25	1.50
Tallow, No 1, p lb.	.05½	.05½	.04½	.04¾	.05¾	.05
Dressed hogs, p 100 lbs.	7.25	7.50	8.00	7.50	7.50	8.25
Dressed veal, p 100 lbs.	10.50	10.50	10.00	11.00	11.50	10.50
Mess pork, p bbl.	14.50	15.00	14.00	14.00	14.00	14.75
Lard, p 100 lbs.	7.50	7.50	8.00	8.00	7.20	7.15
Bran, p ton.	20.50	21.00	21.25	21.25	21.50	20.00
Middlings, p ton.	24.00	24.00	25.00	24.00	23.50	23.50
Beeswax, p lb.	.30	.29	.30	—	.29	.31
Honey, comb, p lb.	.14	—	.14	.14	.14½	.14
Maple syrup, p gal.	.95	1.00	—	—	.85	.85

## PRICES FOR THE YEAR 1904—Continued.

	New York		Chicago			
	July 1	Oct. 1	Jan. 1	Apr. 1	July 1	Oct. 1
Sweet potatoes, p bbl....	—	\$2.00	\$2.75	\$3.50	—	\$2.75
Beets, p bbl.....	†\$1.50	1.25	2.00	2.50	*\$1.50	1.00
Celery, p doz bchs.....	—	.50	.25	.35	.50	.35
Cabbage, p bbl.....	1.00	.75	2.75	3.75	†1.50	†.75
Cauliflower, p doz.....	—	*3.00	1.25	1.25	.50	.35
Turnips, p bbl.....	1.00	.85	1.75	3.00	†1.50	1.00
Tallow, No 1, p lb.....	.04½	.04½	.04	.05	.04¼	.04¼
Dressed hogs, p 100 lbs.	8.50	9.00	6.00	6.00	5.00	6.00
Dressed veal, p 100 lbs.	8.50	10.50	9.00	8.00	8.00	9.00
Mess pork, p bbl.....	14.00	13.50	13.00	13.25	13.00	11.50
Lard, p 100 lbs.....	7.50	7.75	7.00	6.25	6.25	7.75
Bran, p ton.....	19.00	21.00	16.00	15.50	18.00	19.00
Middlings, p ton.....	21.50	24.00	16.50	16.50	19.50	20.50
Beeswax, p lb.....	.30	.28	.29	.32	.30	.33
Honey, comb, p lb.....	.13	.14	.11	.10½	.10	.12
Maple syrup, p gal.....	.75	—	—	—	—	—

\* p bbl, † p 100 bchs, ‡ p cra.

## SIX YEARS OF CROPS

in the United States. The figures for 1899 are in most instances from the federal census. For other years, the American Agriculturist's data are the accepted authority.

[In round thousands, last three figures omitted.]

	1904	1903	1902	1901	1900	1899
Corn, bus.....	2,574,000	2,346,000	2,556,311	1,418,849	2,188,019	2,666,440
Wheat, bus.....	554,713	703,500	760,350	752,311	510,504	668,534
Oats, bus.....	973,135	823,138	1,028,220	700,869	832,254	943,389
Rye, bus.....	30,286	31,822	33,631	30,345	23,959	25,569
Barley, bus.....	144,451	139,145	134,954	109,933	81,816	119,635
Buckwheat, bus....	—	*14,000	14,530	15,126	9,567	11,234
Flaxseed, bus.....	22,190	26,639	29,351	29,079	23,412	19,763
Potatoes (wh.), bus.	288,664	255,009	271,777	193,121	265,100	273,323
Apples, bbls.....	45,360	42,626	44,220	26,970	56,820	58,466
Onions, bus.....	3,288	3,090	3,822	3,050	3,738	4,600
Cranberries, bus...	765	935	675	950	800	988
Hay, tons.....	58,164	57,806	61,000	50,981	52,006	59,000
Tobacco, cs (350 lbs)	149,695	164,080	†181,650	†121,450	†142,800	668,979
Broom corn, lbs....	40,812	31,203	39,750	37,150	39,506	—
Cotton, bls (495 lbs)	*10,500	*10,000	10,720	9,966	10,401	9,535
Hops, bales.....	234	205	196	210	208	275
Cane sugar, tons...	‡215	300	‡130	‡270	‡147	‡246
Beet sugar, tons....	‡208	‡195	‡163	‡77	‡73	‡32

\* Preliminary estimates. † Cigar leaf only. ‡ Exclusive of Porto Rico and Hawaii. § Commercial estimates.

## *Live Stock*

### *Cattle*

#### MOVEMENT AND DISTRIBUTION OF CATTLE.

The cattle industry of the United States, despite the breaking up of the great ranches of the west, is of more importance than ever before. Each year sees a greater capital devoted to the rearing, feeding and slaughtering of beeves. This is not wonderful in view of the ever-growing requirements for domestic consumption and a continuation of a healthy export trade. Methods of handling cattle from range and feed lot, to and through all distributing channels, are much as in recent years.

Five or six centrally located cities of the United States slaughter and distribute the larger part of the beef consumed at home and sent abroad, yet a liberal business of this character is carried on at such eastern points as Pittsburg, Buffalo, New York, Philadelphia, etc. New England slaughtering and packing centers pay relatively less attention to beef than to pork and mutton.

A feature of agriculture in the older middle and eastern states the past few years is the endeavor, within reasonable limitations, to build up a local business in fattening, slaughtering and marketing cattle. Progress in this direction has been slow, however, owing to the very sharp competition of western beef interests. These particularly dominate the meat trade in all the large towns and cities of the east.

The winters of 1903-4 and the entire year of 1904 were featured by comparatively low prices for cattle. However, stock marketed during the latter half of the past year was in most instances bought as feeders at a safe range of prices. On this account losses on fattened cattle were not so heavy as during the preceding year, when farmers sold fat cattle at low figures, and had bought the same stock when thin at high prices. The great strike of packing house employees at western markets during the summer of 1904 upset cattle conditions for many weeks. However, upon the settlement of difficulties normal conditions were shortly restored. It is estimated the packing house strike caused a total loss to slaughterers, feeders and shippers of many millions of dollars.

NUMBER, AVERAGE PRICE AND FARM VALUE OF CATTLE IN THE UNITED STATES ON JANUARY 1, 1904.

[Department of agriculture.]

States and territories	Milk cows			Other cattle		
	Number	Average farm price Jan. 1	Farm value	Number	Average farm price Jan. 1	Farm value
Me. ....	185,417	\$29.91	\$5,545,822	122,440	\$15.74	\$1,926,643
N. H. ....	124,904	31.01	3,873,273	102,210	15.33	1,566,520
Vt. ....	288,197	26.32	7,585,345	223,634	13.73	3,070,176
Mass. ....	188,740	40.40	7,625,086	94,334	17.11	1,614,356
R. I. ....	25,723	40.10	1,031,492	10,549	19.25	203,026
Ct. ....	129,567	39.50	5,117,896	86,609	20.37	1,764,493
N. Y. ....	1,655,328	35.49	58,747,591	936,300	18.08	16,924,184
N. J. ....	179,241	39.04	6,997,569	82,061	20.33	1,668,480
Pa. ....	1,065,071	34.08	35,986,820	798,449	21.83	17,431,341
Del. ....	34,779	33.91	1,179,356	21,390	17.61	376,622
Md. ....	148,912	29.63	4,412,263	132,652	18.49	2,452,653
Va. ....	255,280	24.76	6,320,733	436,189	17.04	7,431,780
N. C. ....	197,431	22.36	4,414,557	298,539	10.74	3,206,769
S. C. ....	110,812	24.48	2,712,678	176,603	11.17	1,972,144
Ga. ....	290,096	22.68	6,352,577	635,494	11.36	7,219,407
Fla. ....	86,149	23.38	2,014,164	522,526	9.09	4,749,133
Ala. ....	232,444	19.57	4,548,929	379,353	7.70	2,922,797
Miss. ....	269,311	22.38	6,027,180	423,132	9.60	4,060,881
La. ....	168,000	24.39	4,097,520	404,945	10.29	4,168,908
Tex. ....	821,991	19.66	16,160,343	8,087,989	10.13	81,928,093
Ark. ....	278,082	18.39	5,113,928	468,964	7.65	3,587,246
Tenn. ....	285,383	22.23	6,344,064	433,557	11.43	4,954,470
W. Va. ....	182,201	28.66	5,221,881	345,209	20.64	7,123,727
Ky. ....	295,584	25.05	7,404,379	488,561	16.64	8,131,271
Ohio ....	782,866	33.17	25,967,665	1,154,323	21.37	24,666,963
Mich. ....	550,643	32.79	18,055,584	729,077	16.71	12,180,406
Ind. ....	553,115	30.57	16,908,726	895,583	21.13	18,919,826
Ill. ....	1,005,484	33.81	33,995,414	1,683,709	24.78	41,714,062
Wis. ....	1,063,944	31.00	32,982,264	1,137,211	14.59	16,593,165
Minn. ....	820,439	25.45	20,880,173	932,481	11.41	10,636,253
Ia. ....	1,363,094	29.09	39,652,404	3,502,532	22.10	77,395,457
Mo. ....	581,415	26.04	15,140,047	1,419,132	19.40	27,525,913
Kan. ....	699,246	24.91	17,418,218	2,604,174	18.90	49,228,000
Neb. ....	649,830	26.53	17,240,229	2,356,919	17.48	41,184,298
S. D. ....	386,253	24.93	9,629,287	1,485,417	18.19	27,013,343
N. D. ....	183,332	28.89	5,296,461	610,923	17.55	10,719,863
Mont. ....	53,951	36.20	1,963,026	1,059,045	19.42	20,563,797
Wyo. ....	19,391	32.96	639,127	804,021	19.60	15,760,416
Col. ....	121,775	30.06	3,660,556	1,260,574	16.45	20,733,866



YEAR BOOK AND ALMANAC

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N. M. ....	19,590	\$31.30	\$613,167	916,095	\$14.55	\$13,330,466
Ariz. ....	18,856	35.91	677,119	556,841	17.30	9,633,401
Utah ....	69,496	30.93	2,149,511	251,783	17.39	4,378,504
Nev. ....	16,170	36.62	592,145	382,373	22.34	8,541,141
Ida. ....	57,327	31.28	1,793,189	351,226	17.97	6,310,761
Wash. ....	154,454	33.41	5,180,308	297,513	19.08	5,676,810
Ore. ....	136,199	30.06	4,094,142	575,744	16.25	9,354,628
Cal. ....	344,232	38.55	13,270,144	1,089,532	21.98	23,944,214
Okla. ....	188,616	21.05	3,970,367	1,351,999	14.06	19,611,943
Ind. Ter. ....	101,447	22.64	2,296,790	510,582	13.13	6,705,420

United States. 17,419,817 \$29.21 \$508,841,489 43,629,498 \$16.32 \$712,178,134

EXPORTS OF BEEF AND BEEF PRODUCTS.

[In round millions of pounds.]

Year ended June 30	Beef, canned	Beef, fresh	Other cured	Tallow	Oleomar-garine	Total value
1904	57	299	57	76	171	\$53,286,225
1903	76	254	53	27	133	51,048,679
1902	67	301	52	34	144	53,230,716
1901	53	352	58	77	166	56,556,193
1900	56	329	50	89	151	54,080,807
1899	38	282	49	107	148	43,780,976
1898	37	275	46	82	137	40,197,094
1897	54	290	68	75	118	40,905,389
1896	64	225	71	53	109	39,644,482
1895	64	191	63	26	88	35,578,071
1894	56	194	64	55	127	40,687,708
1893	79	206	59	62	117	43,002,657
1892	87	221	71	90	93	43,643,645

RANGE OF CATTLE PRICES AT CHICAGO.

Year	Native steers, 1200 to 1800 lbs.	Dry butcher cows and helpers	Stockers and feeders	Western range cattle
1904	\$3.75@7.00	\$2.00@5.25	\$2.00@4.50	\$2.25@5.00
1903	4.00@6.65	2.75@4.75	2.50@5.00	2.50@4.65
1902	3.60@9.00	3.25@8.25	1.90@6.00	2.00@7.40
1901	3.60@9.30	3.20@8.00	1.65@5.15	1.50@5.75
1900	3.90@8.50	3.20@6.00	2.10@5.25	3.20@5.35
1899	4.00@8.25	3.50@6.85	2.50@5.40	3.75@5.79
1898	3.80@6.25	3.20@5.40	2.40@4.75	3.25@5.90
1897	3.25@6.50	1.50@4.50	2.25@4.50	2.25@4.60
1896	3.40@6.50	1.25@4.50	1.90@4.10	2.10@5.50
1895	3.60@6.60	1.50@5.75	1.75@5.15	1.90@5.75
1894	3.00@6.60	1.00@4.40	1.75@4.15	1.50@5.50
1893	4.00@6.75	1.25@5.00	2.00@4.90	1.75@6.29
1892	3.75@7.00	1.00@4.00	1.50@4.10	1.50@5.25
1891	4.00@7.15	1.25@4.60	1.75@4.75	2.00@5.60

## Hogs

Regarding general hog supplies, it may be said that the distribution of swine throughout the world is uneven. North America and Europe probably show 95% of the total number; the United States, Germany and Russia have nearly 70% of these and the United States alone has 35 to 45% of the whole. This distribution is readily accounted for. In the case of most farm animals grass is a principal foodstuff. In the case of hogs it is grain. The countries named are the great grain producers. Of corn, the best hog feed of all, the United States has the monopoly in production.

Enormous quantities of hog meat and products are consumed annually in the United States and sent abroad. Each twelve months a total of approximately 30,000,000 hogs are slaughtered in the United States, of which 20 to 25 million are handled in the packing houses of comparatively few cities. Economies practiced where the business is conducted on a large scale, and facilities for distribution of fresh product through the refrigerator service, constantly tend to further concentrate the killing at large centers.

### RECEIPTS OF HOGS AT LEADING POINTS BY YEARS.

[Stated in round thousands.]

#### THE FOUR LEADING WESTERN POINTS.

	1904	1903	1902	1901	1900	1899	1898	1897	1896	1895
Chicago .....	5916*	7325	7895	8290	8109	8178	8817	8364	7885	6057
Kansas City ...	1833*	1969	2279	3716	3094	2959	3673	3351	2458	1948
Omaha .....	1951*	2231	2247	2414	2201	2216	2101	1611	1187	1460
St. Louis .....	1618*	1700	1330	1924	1792	1801	1728	1627	1085	777

\*January 1 to November 10.

#### THE MIDDLE WEST.

Cincinnati .....	690*	736	722	767	815	869	895	875	773	592
Indianapolis .....	1273*	1530	1251	1487	1323	1546	1681	1253	1109	879
Cleveland .....	731*	885	926	846	989	1098	918	652	375	270

\*January 1 to November 10.

#### THE EASTERN MARKETS.

New York .....	1526*	1518	1349	1681	1825	1825	1797	1578	1763	1488
Boston .....	704§	1266	1448	1401	1275	1681	1495	1420	1400	1373
Buffalo .....	1876*	2440	2227	2040	2032	2160	2558	5621	5256	6058
Pittsburg .....	2018*	2008	1745	1125	—	—	—	1894	1063	999
Philadelphia .....	135*	146	146	160	198	245	240	250	259	275

\*January 1 to November 10. §January 1 to June 30.

ADDITIONAL GROWING TRADE CENTERS.

	1904	1903	1902	1901	1900	1899	1898	1897	1896	1895
St. Paul .....	717*	759	659	609	495	365	333	225	364	194
Sioux City .....	876*	1008	1008	960	833	568	474	350	341	329
St. Joseph .....	1290†	1700	1699	1105	1679	1402	1034	400	252	240
New Orleans ....	16‡	11‡	11	17	19	—	—	18	26	30
Denver .....	138*	117	87	109	116	120	82	75	48	62

\*Jan. 1 to Nov. 10. †Jan. 1 to Nov. 1. ‡Year ended July 1.

TOTAL HOG PACKING BY YEARS.

[Year ended March 1.]

Year	Western packing	Eastern packing	Live receipts, N. Y., Phila. & Baltimore	Total supply
1904 .....	22,375,000	2,780,000	2,461,000	27,616,000
1903 .....	20,605,000	2,800,000	1,841,000	25,246,000
1902 .....	25,410,000	2,749,000	2,235,000	30,395,000
1901 .....	23,265,000	2,759,000	2,620,000	28,980,000
1900 .....	22,215,000	3,092,000	2,879,000	28,172,000
1899 .....	23,510,000	3,164,000	2,978,000	29,793,000
1898 .....	20,201,000	3,073,000	2,861,000	26,134,000
1897 .....	16,929,000	2,791,000	2,950,000	22,670,000
1896 .....	15,010,000	2,603,000	2,867,000	20,480,000
1895 .....	16,003,000	3,099,000	2,517,000	21,619,000
1894 .....	11,605,000	2,701,000	2,485,000	16,789,000
1893 .....	12,390,000	3,016,000	2,790,000	18,196,000
1892 .....	14,457,000	2,971,000	3,684,000	20,912,000
1891 .....	17,713,000	2,540,000	3,713,000	23,966,000

THE 1904 HOG PACK AT LEADING CITIES.

[Year ended March 1.]

	Number		Number
Chicago .....	6,713,000	Sioux City .....	468,000
Kansas City .....	2,087,000	St. Paul .....	811,000
Omaha .....	2,174,000	Milwaukee .....	846,000
St. Joseph, Mo. ....	1,609,000	Cleveland .....	626,000
St. Louis .....	1,571,000	Cincinnati .....	586,000
Indianapolis .....	1,124,000	Cedar Rapids, Ia. ....	502,000

The great hog-packing section of the United States is the territory comprising the "corn belt" states of the Mississippi valley. This is but natural, as the great packing houses are situated close to the base of supply, and there is more economy in shipping the finished product long distances to consuming centers than in shipping the live animals. But all this granted, there is after all an important

packing business in the middle and eastern states, including such centers as Pittsburg, Buffalo, Jersey City, Worcester, Springfield, Boston, amounting to 3,000,000 hogs annually. The following table, compiled from figures furnished by the Cincinnati Price Current, shows the rate at which hogs have been slaughtered in the winter periods at western markets.

### SEASON OF WINTER PORK PACKING IN THE WEST.

[Stated in thousands of hogs.]

Nov. 1 to Mar. 1	Chicago	Kansas City	Omaha	St. Louis	Cincinnati	Milwaukee	Indianapolis	Louisville	Total
1903-4 ...	2926	862	747	628	248	423	479	126	6439
1902-3 ...	2952	747	778	504	221	295	359	144	6000
1901-2 ...	3434	1272	939	642	234	322	477	150	7470
1900-1 ...	2970	1178	786	667	245	396	434	144	6320
1899-0 ...	2870	960	729	604	270	339	411	132	6316
1898-9 ...	3249	1220	791	729	297	446	442	196	7370
1897-8 ...	2673	1305	550	526	276	508	428	177	6443
1896-7 ...	2285	1025	440	415	240	360	345	120	5230
1895-6 ...	2375	869	417	388	250	368	336	129	5132
1894-5 ...	2475	885	535	373	266	349	308	137	5322
1893-4 ...	1696	585	380	255	190	143	258	104	3611
1892-3 ...	1478	617	408	226	204	120	205	112	3370
1891-2 ...	2757	863	635	350	289	326	317	101	5692
1890-1 ...	2838	937	584	291	301	338	315	113	5717
1889-0 ...	2179	682	373	349	272	301	326	106	4588
1888-9 ...	1462	712	333	336	300	274	278	153	3848
1887-8 ...	1732	780	364	370	310	219	301	191	4267
1886-7 ...	1844	769	243	371	331	327	352	199	4436
1885-6 ...	2393	656	106	369	333	343	291	122	4613
1884-5 ...	2368	607	141	442	385	337	317	165	4762
1883-4 ...	2011	427	65	382	365	265	274	142	3931
1882-3 ...	2558	445	91	357	425	294	276	126	4542
1881-2 ...	2368	346	85	316	385	324	249	131	4204
1880-1 ...	2781	340	96	474	522	326	389	231	5159
1875-6 ...	1592	75	18	330	563	182	323	223	3306
1870-1 ...	918	36	—	306	500	241	105	242	2348
1865-6 ...	507	—	—	117	354	88	36	91	1193
1860-1 ...	272	—	—	80	434	51	39	199	1075

### DISTRIBUTION AND VALUE IN THE UNITED STATES.

As the United States is noted for being populated by a meat-eating people, it is but natural that the domestic consumption of pork in its varied forms is enormous. In addi-

tion, the foreign trade in pork product forms a very important part of our export business one year with another. Probably no other single article in the foreign trade is so widely distributed. In the United States, the distribution of hogs and pork is largely the same, geographically speaking.

**DOMESTIC HOG SUPPLY IN LEADING CORN STATES.**

[In round thousands.]

1904	Number	Value	Year	Number	Value
Ohio .....	2,540	\$14,986	1904, total..	50,564	\$312,817
Indiana .....	3,144	18,864	1903.....	49,017	334,311
Illinois .....	4,579	29,764	1902.....	46,612	298,905
Iowa .....	7,303	47,470	1900.....	49,242	45,725
Missouri .....	3,321	19,926	1899.....	48,934	205,301
Kansas .....	2,558	15,604	1898.....	49,597	212,063
Nebraska .....	3,323	20,603	1897.....	47,546	196,257
Other .....	26,768	167,217	1896.....	46,302	204,402

**HOG PRICES AT CHICAGO PER 100 POUNDS.**

Year	Heavy packing, 200 to 460 lbs.	Mixed packing, 200 to 250 lbs.	Light bacon, 150 to 200 lbs.
1904 .....	\$3.75@6.30	\$3.70@6.20	\$3.50@6.10
1903 .....	3.90@7.87½	3.85@5.70	3.90@7.55
1902 .....	5.70@8.25	5.65@8.20	5.40@7.95
1901 .....	4.80@7.37½	4.85@7.30	4.75@7.20
1900 .....	4.05@5.85	4.05@5.82½	4.00@5.75
1899 .....	3.35@4.80	3.40@5.00	3.30@5.00
1898 .....	3.10@4.80	3.10@4.70	3.10@4.65
1897 .....	2.50@4.50	2.90@4.60	3.00@4.65
1896 .....	2.40@4.45	2.75@4.45	2.80@4.45
1895 .....	3.25@5.45	3.25@5.55	3.25@5.70
1894 .....	3.90@6.75	3.90@6.65	3.50@6.45
1893 .....	3.80@8.75	4.25@8.65	4.40@8.50
1892 .....	3.70@7.00	3.65@6.70	3.60@6.85
1891 .....	3.25@5.70	3.25@5.75	3.15@5.95

**THE AVERAGE COST**

Per 100 pounds of hogs packed in the west in recent years has been, for the year ended March 1:

	Summer	Winter	Year	Summer	Winter	Year	
1903-4.....	\$6.11	\$4.74	\$5.54	1899-0.....	\$4.00	\$4.29	\$4.11
1902-3.....	7.06	6.44	6.81	1898-9.....	3.85	3.52	3.71
1901-2.....	5.92	5.97	5.94	1897-8.....	3.70	3.53	3.63
1900-1.....	5.12	5.02	5.07	1896-7.....	3.30	3.30	3.30

AMERICAN AGRICULTURIST  
SEVEN YEARS' EXPORTS OF HOG PRODUCTS.

[In millions of pounds.]

Year	Bacon and hams	Pork	Lard	Total value
1903-4 .....	447	140	561	\$105,248,666
1902-3 .....	421	116	490	110,740,915
1901-2 .....	611	160	556	126,818,431
1900-1 .....	673	169	611	119,253,122
1899-0 .....	709	159	661	109,572,863
1898-9 .....	789	178	711	115,179,340
1897-8 .....	850	100	709	110,801,151

## *Sheep*

There is scarcely a country in the world, except in the frigid zone, but what boasts of her flocks. The woolskins thus constitute one of the great universal species of live stock. The industry in the United States, prominent for a century and more, has always been subject to great fluctuations in point of profits to farmers.

Perhaps more than any other agricultural branch of farming this is affected by legislation. For many years sheep were kept very largely for their wool product, the fleeces being regarded the profitable end of sheep husbandry. Because of this, every influence affecting wool prices was reflected in corresponding changes in the number of sheep kept. But in the last dozen years there has been a remarkable and gratifying increase in the consumption of mutton, and the tendency is now largely in the direction of raising sheep for slaughter, with wool as an incidental product. However, the wool market last year proved sensationally high and encouraged flockmasters greatly.

### SHEEP MOVEMENT IN THE WEST.

Year	Chicago		Kansas City		Omaha	
	Receipts	Shipm'ts	Receipts	Shipm'ts	Receipts	Shipm'ts
1904 .....	*3,912,000	—	*883,300	—	1,562,500	—
1903 .....	4,583,000	1,000,000	1,152,000	361,000	1,864,000	892,190
1902 .....	4,516,000	832,000	1,154,000	411,292	1,743,000	863,250
1901 .....	4,044,000	763,000	961,000	195,000	1,315,000	563,000
1900 .....	3,549,000	487,000	839,000	218,000	1,277,000	553,000
1899 .....	3,683,000	387,000	915,000	308,000	1,087,000	342,000
1898 .....	3,589,000	543,000	963,000	331,000	1,085,000	493,000
1897 .....	3,607,000	638,000	1,115,000	306,000	627,000	206,000

\*January 1 to November 10.

SHEEP IN THE UNITED STATES BY STATES, JAN. 1, 1904.

[United States Department of Agriculture.]

State	Number	Per hd.	Value	State	Number	Per hd.	Value
Me. ....	313,982	2.84	\$893,153	Neb. ...	493,340	\$2.79	\$1,376,664
N. H. ...	82,605	2.83	233,392	S. D. ...	927,246	2.71	2,509,241
Vt. ....	246,488	2.83	697,117	N. D. ...	836,059	2.69	2,252,008
Mass. ...	44,855	4.27	191,424	Mont. ...	5,270,063	2.31	12,184,336
R. I. ...	8,834	3.69	32,576	Wyo. ...	4,602,658	2.58	11,883,603
Ct. ....	34,254	4.54	155,532	Col. ....	1,846,518	2.25	4,152,265
N. Y. ...	1,313,974	3.84	5,042,638	N. M. ...	3,860,466	1.93	7,464,598
N. J. ...	44,685	4.08	182,439	Ariz. ...	1,088,188	2.18	2,375,841
Pa. ....	963,421	3.53	3,402,129	Utah ...	2,391,947	2.29	5,468,230
Del. ....	11,946	4.03	48,199	Nev. ...	879,902	2.48	2,185,283
Md. ....	163,564	3.64	594,686	Ida. ....	3,588,034	2.21	7,913,050
Va. ....	572,314	2.98	1,705,611	Wash. ...	894,335	2.78	2,490,633
N. C. ...	208,027	1.98	401,425	Ore. ....	2,927,198	2.04	5,976,461
S. C. ...	59,452	1.97	117,311	Cal. ....	2,271,249	2.75	6,237,758
Ga. ....	276,960	1.72	476,298	Okla. ...	64,242	2.58	165,686
Fla. ....	110,955	2.15	238,909	I. T. ....	25,295	2.11	53,488
Ala. ....	195,773	1.83	358,500				
Miss. ...	187,489	1.68	314,907	Total. 51,630,144	\$2.59	\$133,530,099	
La. ....	176,955	1.89	333,012	1903....	63,964,876	2.63	168,315,750
Pa. ....	1,667,139	1.97	3,285,431	1902....	62,039,091	2.65	164,446,091
Tex. ....	198,704	1.65	327,027	1901....	59,756,718	2.98	178,072,476
Ark. ....	300,378	2.24	671,584	1900....	41,883,065	2.93	122,665,913
Tenn. ...	648,951	3.08	1,995,784	1899....	39,114,453	2.75	107,697,530
W. Va. ...	719,779	2.71	1,948,441	1898....	37,656,960	2.46	92,721,133
Ky. ....	3,171,963	3.20	10,158,528	1897....	36,818,643	1.82	67,020,942
Ohio ...	2,120,090	3.14	6,659,415	1896....	33,298,783	1.70	65,167,735
Mich. ...	1,233,447	3.45	4,249,472	1895....	42,294,064	1.58	66,685,767
Ind. ....	820,184	3.55	2,910,751	1894....	45,048,017	1.98	89,186,110
Ill. ....	1,355,341	2.94	3,961,721	1893....	47,273,553	2.66	125,909,264
Wis. ....	513,337	2.61	1,340,631	1892....	44,938,365	2.58	116,121,290
Minn. ...	862,118	3.31	2,856,886	1891....	43,431,136	2.50	108,379,447
Ia. ....	778,121	2.90	2,254,683	1890....	44,336,072	2.27	100,659,761
Mo. ....	263,219	2.97	781,312				
Kan. ...							

RECEIPTS OF SHEEP AT LEADING POINTS BY YEARS.

[Stated in round thousands.]

THE FOUR LEADING WESTERN MARKETS.

	1904	1903	1902	1901	1900	1899	1898	1897	1895	1893
Chicago ...	3912*	4583	4516	4044	3549	3683	3589	3607	3407	3031
Kansas City ...	883*	1152	1154	980	860	953	990	1134	865	570
Omaha .....	1562*	1864	1743	1315	1277	1086	1085	627	205	252
St. Louis .....	604*	528	523	520	416	409	436	609	455	350

\*January 1 to November 10.

**AMERICAN AGRICULTURIST**  
**THE MIDDLE WEST.**

	1904	1903	1902	1901	1900	1899	1898	1897	1895	1893
Cincinnati .....	354*	394	356	332	283	387	427	469	652	808
Indianapolis .....	78*	101	103	126	67	65	85	88	122	33
Cleveland .....	168*	194	187	143	130	96	70	73	90	62

\*January 1 to November 10.

**THE EASTERN MARKETS.**

	1904	1903	1902	1901	1900	1899	1898	1897	1895	1893
New York .....	1514*	1944	2038	2162	1953	1762	1883	1631	2375	2055
Boston .....	195†	426	476	450	367	375	493	559	784	530
Pittsburg .....	1126*	703	—	—	—	—	—	1011	843	715
Buffalo .....	1876*	2440	1129	2061	1668	1712	1784	1878	3228	2578
Philadelphia .....	427*	437	492	473	369	341	339	376	577	459

\*January 1 to November 1. †January 1 to June 30.

**ADDITIONAL GROWING TRADE CENTERS.**

St. Paul .....	636*	876	601	331	486	332	429	300	175	153
Sioux City .....	23*	42	61	67	61	36	21	10	14	27
St. Joseph, Mo. . . . .	714‡	599	561	526	390	258	121	14	22	26
New Orleans .....	6†	6†	13	12	12	—	—	13	23	29
Denver .....	331*	318	317	228	306	221	284	306	156	130

\*Jan. 1 to Nov. 10. †Jan. 1 to Nov. 1. ‡Year ended July 1.

**EXPORTS OF SHEEP AND MUTTON; IMPORTS OF SHEEP.**

Year ended June 30	Exports				Imports Sheep	
	Sheep		Mutton		Number	Value
	Number	Value	Pounds	Value		
1904 .....	301,313	\$1,954,604	465,255	\$40,618	236,841	\$791,561
1903 .....	176,961	1,067,860	6,144,020	532,476	299,886	1,036,934
1902 .....	358,720	1,940,060	430,351	37,067	266,953	956,710
1901 .....	297,925	1,933,000	690,121	46,643	331,488	1,236,277
1900 .....	125,772	733,477	773,760	64,313	381,792	1,365,026
1899 .....	143,286	853,555	379,110	29,427	345,911	1,199,081
1898 .....	199,690	1,213,886	329,169	27,961	392,314	1,106,322
1897 .....	244,120	1,531,645	361,955	28,341	405,633	1,019,668
1896 .....	491,565	3,076,384	422,950	31,793	322,692	853,530
1895 .....	405,748	2,030,686	591,499	47,832	291,461	682,618
1894 .....	182,370	832,763	2,197,900	174,404	242,568	788,181
1893 .....	37,260	126,394	108,214	9,175	459,484	1,682,977
1892 .....	46,960	161,105	101,463	9,022	380,814	1,740,530
1891 .....	69,947	261,109	199,395	18,959	345,765	1,219,206
1890 .....	67,521	243,077	256,711	21,783	333,794	1,268,209



RANGE OF PRICES OF FLEECE WOOL.

Wholesale prices at New York city, in cents per pound. The Ohio wools are washed clothing, the Kentucky and Indiana are unwashed.

Year	January			April			July			October		
	Ohio X and XX	Ohio, medium 1-4 and 3-8	Ky. and Ind. 1-4 and 3-8	Ohio X and XX	Ohio, medium 1-4 and 3-8	Ky. and Ind. 1-4 and 3-8	Ohio X and XX	Ohio, medium 1-4 and 3-8	Ky. and Ind. 1-4 and 3-8	Ohio X and XX	Ohio, medium 1-4 and 3-8	Ky. and Ind. 1-4 and 3-8
1904 ...	33½	32	25	33	32	25½	34½	33	30	34	34	30
1903 ...	30	31	23½	29½	30½	22½	33	25	25	34	25½	25
1902 ...	25½	26½	21½	25	26½	21½	27	27½	22½	28	28½	22½
1901 ...	26	29	23½	25	27½	22½	25	26	19½	25	26½	20
1900 ...	35	36½	28	32½	36	27½	30½	34	25	27	28½	24
1899 ...	26½	29	21½	25	28	21½	28½	31	23	31	33½	24
1898 ...	28	30	22	29	29½	22	28	29½	22	28½	30	22½
1897 ...	19	20	17	21	22½	20	21½	23½	20	27	29	33
1896 ...	19	21	17½	19	21	17	17	18	14½	18	19	15
1895 ...	17½	20	17	16½	20	17	18	21	19	18	21	19
1894 ...	23	24	19	21	23	19	20	20	17	18½	21	18
1893 ...	29½	33	25½	30½	33	25½	24½	27	21	23	25½	20

QUOTATIONS ON SHEEP AND LAMBS AT CHICAGO.

[Poor to best, per 100 pounds live weight.]

Year	Native sheep	Native lambs	Western sheep	Tex. and Mex. sheep and lambs
1904 .....	\$2.25@6.00	\$3.50@7.10	\$2.50@5.50	—
1903 .....	2.25@7.00	2.50@8.00	2.75@3.75	\$2.50@7.50
1902 .....	1.25@6.50	2.00@7.25	1.25@6.30	2.50@7.60
1901 .....	1.40@5.25	2.00@6.25	1.50@5.25	2.75@5.90
1900 .....	2.00@6.50	3.00@7.60	3.00@6.50	4.00@7.60
1899 .....	2.25@5.65	3.50@7.45	2.50@5.55	4.00@7.00
1898 .....	2.00@5.25	3.50@7.10	3.00@5.25	3.75@6.75
1897 .....	1.50@5.35	3.00@6.20	2.00@4.60	2.00@4.25
1896 .....	1.75@4.60	1.85@6.60	1.15@4.30	1.25@3.75
1895 .....	1.75@5.50	1.75@6.35	1.50@5.35	1.00@5.15
1894 .....	1.50@5.40	1.00@6.00	1.10@5.40	1.00@4.50
1893 .....	1.25@6.25	2.25@7.55	1.25@6.45	1.25@5.60
1892 .....	2.25@6.90	3.00@8.25	3.00@6.75	2.25@6.35
1891 .....	2.00@7.00	3.25@8.50	3.25@6.85	2.05@5.75

## WOOL CLIP OF UNITED STATES, BY STATES.

State	Clip of 1904, pounds	Scoured equiv't, pounds	State	Clip of 1904, pounds	Scoured equiv't, pounds
Me.	1,380,000	828,000	Wyo.	29,450,000	8,835,000
N. H.	290,600	195,300	Ida.	14,950,000	5,232,500
Vt.	960,000	480,000	Wash.	4,480,000	1,433,600
Mass.	174,000	95,700	Ore.	14,500,000	4,495,000
R. I.	35,750	20,735	Cal.	11,731,250	2,770,000
Ct.	150,000	90,000	Nev.	4,200,000	1,260,000
N. Y.	4,050,000	2,025,000	Utah	13,162,500	4,324,635
N. J.	160,000	84,800	Col.	9,100,000	2,912,000
Pa.	5,100,000	2,448,000	Ariz.	4,340,000	1,345,400
Del.	39,000	19,500	N. M.	17,325,000	6,237,000
Md.	500,000	265,000	Tex.	9,360,000	2,995,200
W. Va.	2,517,500	1,359,450	Okl., I. T...	360,000	115,200
Ky.	2,875,000	1,782,500	Total	249,783,032	95,795,147
Ohio	12,198,432	5,855,247	Pulled wool.	42,000,000	28,140,000
Mich.	7,800,000	3,900,000	G'd total, '04.	291,783,032	123,935,147
Ind.	4,550,000	2,275,000	1903	287,450,000	124,366,405
Ill.	3,806,250	1,827,000	1902	316,341,032	137,912,085
Wis.	4,525,000	2,353,000	1901	302,502,382	126,814,690
Minn.	2,450,000	1,176,000	1900	288,636,621	118,223,120
Ia.	3,510,000	1,725,000	1899	272,191,330	113,958,468
Mo.	3,737,500	1,906,125	1898	266,720,684	111,661,581
Va.	1,507,500	934,650	1897	259,153,251	111,365,987
N. C.	820,000	475,600	1896	272,475,000	115,285,000
S. C.	200,000	116,000	1895	294,297,000	125,719,000
Ga.	950,000	570,000	1894	325,211,000	140,292,000
Fla.	350,000	210,000	1893	348,538,000	151,104,000
Ala.	700,000	420,000	1892	333,018,000	145,300,000
Miss.	920,000	533,600	1891	307,402,000	139,327,000
La.	573,500	315,425	1890	309,475,000	139,628,000
Ark.	800,000	464,000	1880*	155,682,000	—
Tenn.	1,105,000	663,000	1870*	100,102,000	—
Kan.	1,360,000	435,200	1860*	60,264,000	—
Neb.	2,000,000	640,000	1850*	52,517,000	—
S. D.	3,881,250	1,552,500	1840*	35,802,000	—
N. D.	2,925,000	1,170,000			
Mont.	37,773,000	13,598,280			

\*United States census.

**Our Dairy Department****BUTTER AND CHEESE.**

The standard of excellence was never higher, nor were cheese factories and creameries ever better manned than at the present day. The production of cheese continues considerably greater than domestic requirements and the foreign outlet should be greatly expanded. The situation is somewhat different in butter. The splendid home markets ab-

sorb practically the entire output of creameries and dairies. True, a moderate quantity of butter is exported each year, but this is very small compared with the total product.

In the single item of butter the annual production on farms and in creameries approximates 1,500,000,000 pounds. The annual cheese production, including that made on farms and in factories, is about 300,000,000 pounds. In butter, substantially two-thirds of the total is made on farms, while in cheese the situation is very different, factory production constituting over 90% of the total. The ten most important states in dairying, according to the federal census of 1900, arranged in order of rank as follows: New York, Iowa, Illinois, Wisconsin, Pennsylvania, Texas, Ohio, Missouri, Minnesota and Kansas; this based on the number of dairy cows in each of the states. But, if prime consideration be given to gallons of milk produced, Pennsylvania would take third place, Wisconsin fourth, with Texas at the foot of the list. If greatest weight be given to farm value of dairy produce, the order is as follows: New York, Pennsylvania, Illinois, Iowa, Wisconsin, Ohio, Michigan, Minnesota, Texas, Missouri.

It will be noted that from every point of view New York ranked as the leading dairy state, but the central west is a close second. In fact, in the years 1900-1904, inclusive, the great west has nearly dominated the butter trade of the country, and 1905 has much of promise. Outside of a few western states of the highest importance as dairy sections, such as Iowa, Wisconsin and Minnesota, dairy cows are kept as incidental to the more general live stock interests. It is now generally agreed that good butter can be made wherever good beef can be raised. The older middle and eastern states, including northern New England, are favored with nearness to splendid consuming markets, which readily absorb every pound of butter that can be produced. The great central west is favored with excellent pastures, and cheap grain and millfeeds, but is obliged to pay fairly heavy freights to the Atlantic seaboard.

#### THE FOREIGN OUTLET SHOULD ENLARGE.

The weakest spot in the dairy trade is the woful lack of a foreign outlet. True, exports are considerable, but should be greatly enlarged. The splendid cheese made in Canada is a sharp competitor and exports for the United States in recent years have fallen far short of a decade ago.

Commendable efforts are being made by the trade in enlarging the foreign outlet for butter. The United King-

dom, an enormous consumer of foreign made butter, continues to be our best consumer for the comparatively small amount we export. Denmark enjoys the lion's share of the trade with England, getting annually about half of it, Russia coming second. Canada ships to England about five times as much butter as goes from our own borders.

In the accompanying tables may be seen the movement at the two chief distributing centers. Receipts of butter at Chicago are substantially heavier than a dozen years ago, while there is less difference in the movement toward New York city. Prices of butter and cheese both averaged low during the summer of 1904.

## DOMESTIC AND FOREIGN MOVEMENT OF BUTTER.

Year	Chicago		New York		Foreign trade in butter, year ended June 30				
	Receipts, pounds, millions and tenths	Prices, west- ern extra creamery	Receipts, pounds, millions and tenths	Prices, west- ern extra creamery	Exports, pounds, millions, and tenths	Average value, cents	Imports, pounds	Average value, cents	Rate of duty, cents
1904...	—	*17@26	*120.0	*17½@26	10.7	16.5	153,536	22.6	6
1903...	232.0	18½@28½	129.7	19@29	8.9	18.0	207,007	24.9	6
1902...	219.3	19@28	115.9	20@29	16.0	18.0	453,978	17.7	6
1901...	253.8	18@24	122.4	19@25	23.2	17.2	93,669	20.7	6
1900...	244.4	18@26	115.3	16@27	18.3	17.2	49,791	19.6	6
1899...	231.0	17@26	113.9	18@27	20.2	16.1	23,700	16.7	6
1898...	222.6	16@22	117.1	17@23	25.7	15.0	31,984	17.1	6
1897...	225.5	14@23	126.6	14@24	31.3	14.3	38,000	16.0	4
1896...	236.8	15@24	129.6	15@26	19.4	15.2	52,000	16.4	4
1895...	186.2	16@25	108.8	17@28	5.6	16.2	72,000	18.0	4
1894...	167.4	15@27	93.8	17@28	11.8	17.5	144,000	16.2	6
1893...	150.7	19@23	97.6	20@35	8.9	18.7	73,000	18.4	6
1892...	154.1	17@31	99.8	17@32	15.0	16.3	114,000	14.5	6
1891...	137.8	17@35	109.5	†22@26	15.2	14.5	381,000	15.4	6
1890...	147.2	14@29	113.5	†20@23	29.7	14.0	76,000	18.0	4
1889...	158.1	†16	122.6	†21@23	15.5	16.6	179,000	13.7	4
1888...	103.5	†18	101.9	†24@26	10.5	18.0	143,000	18.4	4
1887...	107.7	†15	100.7	†23@25	12.5	15.8	236,000	16.1	4
1886...	106.2	†15½	98.9	†25@27	19.0	15.6	179,000	15.8	4
1885...	—	16@40	99.4	†20@24	21.7	16.8	187,000	18.7	4
1884...	—	†18	93.3	†20@25	20.6	—	—	—	—
1883...	—	†18	93.4	†20@26	12.3	18.6	—	—	—
1882...	—	†19	80.5	†28@32	14.8	—	—	—	—
1881...	—	†19	89.1	†24@27	31.6	—	—	—	—
1880...	—	18@37	—	—	39.2	17.1	—	—	—

\*January 1 to November 15. †Average for western extra creameries. ‡Represents average price for all.

CHEESE MOVEMENT AND FOREIGN TRADE.

Year	Chicago		New York		Foreign trade in cheese, year ended June 30					
	Receipts, pounds, millions and tenths	Prices, cts., full cream	Receipts, pounds, millions and tenths	Prices, cts., full cream	Exports, pounds, millions and tenths	Average value, cents	Imports, pounds, millions and tenths	Average value, cents	Rate of duty, cents	
1904....	—	*7@12½	*55.0	6½@12	23.3	10.5	22.7	14.4	6	
1903....	82.1	10@14½	67.3	9½@15½	18.9	11.8	20.7	15.4	6	
1902....	88.7	9@13	60.7	9@13½	27.2	10.0	17.0	14.9	6	
1901....	116.3	9@12	69.0	8@12½	39.8	9.9	15.0	13.9	6	
1900....	115.3	7@12½	70.1	9@13½	48.4	10.2	13.3	13.1	6	
1899....	99.4	8@13	59.3	7½@13	38.1	8.6	11.7	13.2	6	
1898....	89.8	8@11	58.8	7@11	53.1	8.5	10.0	13.4	6	
1897....	84.1	7@11	79.9	7@12	50.9	9.1	12.3	13.5	4	
1896....	73.1	6@10	55.4	6@11	36.8	8.1	10.7	13.6	4	
1895....	58.3	7@11	62.8	6@12	60.4	9.1	10.3	14.1	4	
1894....	60.4	8@13	79.8	9@12	73.9	9.7	8.7	14.2	6	
1893....	59.3	7@12	78.5	9@12	81.4	9.4	10.2	14.0	6	
1892....	64.4	8@12	100.1	9@13	82.1	9.4	8.3	14.9	6	
1891....	63.9	7@12	89.3	†10@11	82.1	9.0	8.9	15.3	6	
1890....	68.8	7@11	99.3	†9@10	95.4	9.0	9.3	14.0	6	
1889....	56.8	†9	96.5	†10@11	85.0	9.3	8.2	13.8	4	
1888....	51.8	†9	99.6	†10@11	88.0	9.9	8.8	13.9	4	
1887....	44.3	†9	99.7	†11@12	81.3	9.3	6.6	13.3	4	
1886....	35.9	†8	97.1	†9@11	91.9	8.3	6.3	13.5	4	
1884....	—	†10	120.3	†9@12	112.9	—	—	—	—	
1882....	—	†11	117.6	†10@13	128.0	—	—	—	—	

\*January 1 to November 15. †Average price for the year.

STATE STANDARDS FOR MILK AND CREAM.

State	Milk			Cream	State	Milk			Cream
	Total solids %	Solids not fat %	Fat %			Total solids %	Solids not fat %	Fat %	
Dist. of Col...	—	9	3.5	20	N. H. ....	13	9.5	3.5	—
Ga. ....	—	8.5	3.5	—	N. J. ....	12	—	—	—
Ill. ....	12	—	3	15	N. Y. ....	12	—	3	—
Ind. ....	—	9	3	—	N. D. ....	12	—	3	15
Ia. ....	12.5	—	3	15	Ohio ....	12	—	3	—
Ky. ....	12	—	3	15	Ore. ....	12	9	3	—
Me. ....	12	—	3	—	Pa. ....	12.5	—	3	—
Md. ....	12.5	—	3.5	—	R. I. ....	12	—	2.5	—
Mass. ....	13	9.3	3.7	—	S. C. ....	—	8.5	3	—
Mich. ....	12.5	—	3	—	Utah ....	—	—	—	—
Minn. ....	13	—	3.5	20	Vt. ....	12.5	9.25	4	—
Mont. ....	12	—	3	—	Wash. ....	—	8	3	18
Neb. ....	—	—	3	15	Wis. ....	—	—	3	—

## AREA PRINCIPAL FARM CROPS BY YEARS.

[In round millions of acres. U. S. department of agriculture.]

Year	Cotton	Wheat	Corn	Oats	Rye	Barley	Buck wheat	Po- tatoes	Hay
1904	31	48	93	29	2	5	—	3	40
1903	29	†55	†91	†30	†2	†5	†1	†3	†40
1902	28	†52	94	29	2	4.7	0.8	3	†40
1901	28	†52	91	29	2	4.3	0.8	2.8	39
1900	25	42	83	27	1.6	2.9	0.6	2.7	39
1899	23	45	82	26	1.7	2.9	0.7	2.6	41
1898	25	44	78	26	1.6	2.6	0.7	2.5	43
1897	24	†39	†83	†29	—	—	—	†2.7	†44
1896	23	†37	81	†30	1.8	3	0.8	†2.8	43
1895	20	34	82	†30	2	3.3	0.8	3	44
1894	24	35	63	27	2	3.2	0.8	2.7	48
1893	20	35	72	27	2	3.2	0.8	2.6	50
1892	†18	39	71	27	*	*	*	*	*
1891	†21	40	76	26	*	*	*	*	*
1890	†21	36	72	26	*	*	*	*	*
1889	20	38	78	27	*	*	*	*	*
1888	19	37	76	27	2.4	3	9	2.5	39
1887	19	38	72	26	2	2.9	9	2.4	38
1886	18	37	76	24	2	2.7	9	2.3	37
1885	18	34	73	23	2	2.7	0.9	2.3	40
1882	17	37	66	18	2	2.3	0.8	2.2	32
1880	15	38	62	16	1.8	1.8	0.8	1.8	26
1875	—	26	45	12	1.4	1.8	0.6	1.5	24
1870	—	19	39	9	1.2	1	0.5	1.3	20
1865	—	12	19	7	1.4	0.5	1.0	1	16

\*No estimate for year indicated. †Commercial estimate.

## The Poultry Industry

Each year finds this branch of farming more strongly in favor. As a specialty, poultry farming is given wide attention in the older middle and eastern states, particularly in territory contiguous to the big cities. Yet the bulk of the supply is still centered in the middle west and southwest, where there is plenty of range and where grain and feeds are cheapest. Poultry raising has assumed the proportions of a distinct industry, largely replacing the position it held a generation ago of a mere incident in general farming. Perhaps the feature of the past 18 months is the relative scarcity in turkeys. Supplies for market have been short for two winters and prices high.

In recent years the keenest consideration has been accorded egg production, broiler raising, capon rearing and the dressing of poultry for city markets. It requires con-

siderable capital and much skill to successfully engage in the raising of early spring chickens or broilers, but the incubator, the brooder, various other devices and a wider understanding of care of poultry make good profits possible. Cold storage has also been a powerful factor in developing the poultry industry, serving to regulate prices here, as in many other lines of perishable farm produce. It is estimated that the cold storage capacity for eggs and poultry increased 50% during the ten years ending with 1900, and since then the enlargement in storage capacity has been heavy.

Poultry on farms was given much consideration when the last federal census was taken. It was difficult to secure comprehensive data, because so many farmers had failed to give the poultry business the proper consideration, and many of the county returns were little more than estimates at best.

Farmers of the United States experience no difficulty in finding a good domestic market for their eggs. Compared with the total production, foreign shipments of eggs from this country are very small. Our exports have fallen off recently to much smaller proportions than a few years ago, owing chiefly to the enormous demands for home use. The duty of 5 cents per dozen shuts out foreign eggs, although a few filter across the border from Canada each year.

## FOREIGN EGG TRADE, YEAR ENDED JUNE 30.

Year	Exports		Imports		
	Dozens	Avg. val., cents	Dozens	Avg. val., cents	Duty, cents
1904	1,776,632	22.3	496,825	12.4	5
1903	1,517,189	21.4	368,480	8.0	5
1902	2,717,990	19.4	384,070	9.7	5
1901	3,692,875	18.3	126,520	8.2	5
1900	5,920,727	16.6	135,088	—	5
1899	3,693,611	17.3	225,180	9.4	5
1898	2,754,810	15.9	166,810	—	5
1897	1,300,183	13.9	579,681	8.2	3
1896	328,485	14.6	947,132	9.3	3
1895	151,007	16.7	2,705,502	11.7	3
1894	163,061	16.1	1,791,430	11.1	5
1893	148,489	23.1	3,318,011	11.8	5
1892	183,063	17.4	4,198,492	12.4	5
1891	263,116	17.6	8,233,043	10.8	5
1890	380,884	15.4	15,062,796	13.7	free
1889	548,750	13.8	15,918,809	15.2	free
1888	419,701	16.0	15,642,861	14.8	free
1887	372,772	16.3	13,936,054	14.1	free
1886	240,768	21.5	16,088,450	15.4	free
1885	360,623	20.8	15,879,065	17.4	free

EGG MOVEMENT AND MARKET; RECEIPTS AND PRICES  
AT LEADING POINTS.

Year	New York			Chicago			Boston				
	Rechts. million dozen	Prices (in cents)		Rechts. million dozen	Prices (in cents)		Rechts. million dozen	Prices (in cents)			
		Apr. 1	Sept. 1		Dec. 1	Apr. 1		Sept. 1	Dec. 1	Apr. 1	Sept. 1
1904	83.6	19	24	38	†63.1	18	21	27	19	25	38
1903	88.2	20	26	38	94.0	18	21	28	20	28	40
1902	82.3	18	24	29	79.8	16	20½	25	18	22	30
1901	87.3	14	22	31	83.5	12¾	17	23	14	20	30
1900	84.0	13½	14	29	74.3	11½	16	26	12½	22	30
1899	78.7	14½	21	24	62.9	13	16½	20	13½	17	25
1898	76.3	11¾	17½	27	64.4	10½	14½	26	11	18	25
1897	83.1	11	19	25	65.0	9½	13½	19	14	23	32
1896	77.8	12½	18	27	69.0	10¾	11¾	22	16	20	33
1895	68.5	14½	17	27	64.6	12	13	20	15	23	28
1894	69.7	12	19	27	63.2	10	15	21	13	22	30
1893	63.4	16	18	28	51.9	14½	14	21	18	22	30
1892	60.7	13½	22	32	64.6	13	17½	24	15	26	35
1891	56.0	20	19½	29½	41.8	17½	16½	26	22	23	35
1890	51.5	17	24	32	44.3	14	16½	26	18	24	35
1889	—	14½	16½	29	30.6	10¾	14½	24	15	22	32
1888	—	22	20½	26	18.7	14	16	22	21	21	30
1887	—	13½	17½	26	13.5	—	—	—	16	21	30
1886	—	15½	16	28	11.4	—	—	—	17	18	28
1883	21.0	20	23½	31½	—	—	—	—	21	24	32

\* Jan. 1 to Nov. 10. † Not including through shipments.

## Hides

In a sense a by-product of the farm, the trade in hides and skins is always interesting. A sentiment of some breadth has appeared in the east demanding the importation of hides free of all tariff. This has been in evidence during the past 12 months, and took accentuated shape in the Massachusetts election in November, 1904, when it was made somewhat of an issue in the state campaign. In a general way, however, congress is loath to open the tariff question, and any effort to do so would be bitterly opposed by protection interests. For many years foreign hides and skins were on the free list, but at the last revision of the tariff laws in 1897, were placed on the dutiable list at the rate of 15% ad valorem. The law provides, however, that upon all leather exported, made



from imported hides, there shall be allowed a drawback equal to the amount of duty paid on such hides. This practically amounts to free hides so far as the business is concerned in manufacturing leather and leather goods for the foreign markets.

In the wholesale markets, domestic hides are placed in two general classifications, country skins and packer hides. The shrinkage from green weight at time taken off to green cured weight, at which they are sold, is about 15%. This shrinkage varies with the season at which hides are taken off. In some instances, long haired hides taken from cattle killed during the winter will shrink as little as 9 to 10%, while short haired hides from summer killed cattle will shrink 18 to 20%. Hides taken off by packers will run about as follows for average weight: Native steers 65 pounds, native cows 55 pounds, Texas and western range steers 60 pounds, Texas and western range cows 50 pounds. The weight of the green hide in percentage of the total weight of the live animal is 5 to 6% in the case of fat corn fed native stock, up to 8 to 9% on rough grass fed steers from the range territory of Texas and other western sections.

## *Situation in Oleo Traffic*

The evidence in the case goes to show general wisdom in framing the federal oleo law in effect in 1902, and its enforcement since. The criticisms made by the cattle feeding interests at the time, no doubt thoroughly sincere, have quite disappeared. There is no further suggestion that beef cattle, or for that matter swine, would turn more dollars into the farmers' pockets if it were not for the restrictions of the oleo law.

About the only ripple of novelty in the situation is the development late in 1904 of an effort among oleo interests looking toward a repeal of the law. This immediately followed the announcement of a decision of the supreme court to the effect that the use of palm oil constitutes "artificial coloration," which is directly against the provisions of the law. Oleo manufacturers have shown a disposition to get together, create a fund, form a lobby and seek to secure changes in the federal law which will enable them to do about as they please in handling the traffic. The dairy interests are keenly alive to the situation, however, and will resist any attempt in this direction.

## THE ANNUAL OUTPUT OF OLEO

is now only one-third what it was at the high water mark. During the fiscal year ended June 30, 1904, 48,000,000 pounds were manufactured, against 73,000,000 pounds in 1903, and 126,000,000 pounds in 1902, the last year under the low tax rate of 2 cents a pound. It will be recalled that under the present law, oleo colored in imitation of butter pays 10 cents a pound, and that sold in its natural color  $\frac{1}{4}$  cent per pound. During the first three months of the fiscal year 1904-5, the total production of oleo, colored and uncolored, was only 7,660,000 pounds, compared with 11,638,000 pounds the same period one year earlier. This showed a decrease of the bogus butter in three months of the present fiscal year of 4,000,000 pounds.

The claim of the oleo people that a regulated traffic in the product would mean permanently higher prices for butter, this in turn unfavorably affecting consumers, has fallen flat. Butter really averaged somewhat lower in 1903 and 1904 than prior to these years. Stated differently, the cost of butter to consumers has not been unfavorably affected by the new oleo law. During the first year in which the present law was in effect, the output of oleo was smaller by 50,000,000 pounds, yet dairymen prevented any shortage in requisite butter supply, increasing their output of the latter to such an extent that there was plenty at prices anything but exorbitant.

In fact, there was a considerable excess in the production of butter over the amount necessary to take the place of supplanted oleo, and in consequence butter prices throughout much of the summer and autumn of 1904 ruled rather low. These conditions will right themselves in time.

## PRODUCTION OF OLEOMARGARINE.

Yr. ended June 30	Production, pounds	Revenue to U. S.	Yr. ended June 30	Production, pounds	Revenue to U. S.
1904.....	48,071,000	\$484,097	1895.....	56,958,000	\$1,409,000
1903.....	71,211,000	443,272	1894.....	69,622,000	1,723,000
1902.....	126,316,000	2,944,000	1893.....	67,224,000	1,671,000
1901.....	104,944,000	2,518,000	1892.....	48,364,000	1,266,000
1900.....	107,045,000	2,544,000	1891.....	44,392,000	1,078,000
1899.....	83,130,000	1,967,000	1890.....	32,324,000	786,000
1898.....	57,516,000	1,316,000	1889.....	35,664,000	894,000
1897.....	45,531,000	1,034,000	1888.....	34,326,000	864,000
1896.....	50,853,000	1,219,000	*1887.....	21,514,000	724,000

\*From November 1, 1886, to June 30, 1887.

## *Milk Statistics*

### ORGANIZATIONS OF MILK PRODUCERS.

For a number of years influential organizations have been maintained in the east for co-operative effort in marketing milk at advantageous terms. Perhaps the best of these organizations is in New England, contiguous to the Boston market. Another fairly strong association covers the territory shipping into New York city, and there are still others handling milk in the Philadelphia territory, in the Pittsburg territory, Chicago, etc.; although organization in the west, as a whole, is wholly inadequate to enable producers to secure reasonable profits.

Long known as the New England Milk Producers' Union, a large number of milk farmers within a radius of 75 miles of Boston have been associated to secure reasonable prices, with a margin of profit. A year or two ago the name was changed from union to association, and in 1904, by vote of the members, it was merged into the Boston Co-operative Milk Producers' Company. The officers of this company are as follows: President, M. A. Morse of Belchertown, Mass.; first vice-president, J. Bemis of Charlton, Mass.; second vice-president, Stanley H. Abbott of Wilton, N. H.; clerk, W. A. Hunter of Worcester, Mass.; treasurer, M. P. Palmer of Groton, Mass.

The Five States Milk Producers' Association has been in the field for a number of years in the milk territory tributary to New York city. This includes southeastern New York, northwestern Pennsylvania, northern New Jersey, western Connecticut and one or two towns in Massachusetts. The organization has done good work in advancing the interests of producers, and in securing a general advance in price, compared with the low level of a few years ago. The officers of the F. S. M. P. A. are as follows: President, Ira L. Snell of Kenwood, N. Y.; vice-president, I. P. Moore of Roxbury, N. Y.; secretary-treasurer, H. T. Coon of Homer, N. Y.

### THE NEW YORK MILK BUSINESS.

No material change has taken place in the past year and more in methods of handling the business in Greater New York. The milk exchange, which is composed of a few of the larger dealers and some producers, "fixes the price of milk shipped to the New York market" monthly or oftener. This exchange price includes the freight from country to

city. On milk from west of the Hudson river, 5 cents per can is deducted from this price as an "allowance" for ferrriage or transfer. The cans hold 40 quarts, and are generally furnished by the shipper; there is much complaint of lost cans. Instead of the uniform freight rate of 32 cents per can of 40 quarts that had prevailed for years (except that a very short haul near market was charged 25 cents), the interstate commerce commission decreed in March, 1897, a 23-cent rate for all stations in the zone within 40 miles of the terminal at New York city, Jersey City, etc.; between 40 and 100 miles, 26 cents; between 100 and 190 miles, 29 cents; beyond 190 miles, 32 cents. Milk is hauled 400 miles to the New York market, and 135 miles to Boston. The exchange price is based on zone B; thus \$1.31 per can, less freight 26 cents and ferrriage 5 cents, nets the producer \$1 per can, or 2½ cents per quart if he gets the full market price. Hence, \$1.31 per can is said to make "the exchange price 2½c per quart." How this operates at various distances is here shown:

FREIGHT ZONES AND RATES FOR NEW YORK MILK.

	Zones			
	A	B	C	D
Miles from market.....	40	41 to 100	101 to 190	Over 190
Freight rate per can of 40 qts...	\$0.23	\$0.26	\$0.29	\$0.32
Add for ferrriage on milk delivered on west side of the Hudson, per can.....	.05	.05	.05	.05
Total cost of getting milk to market from west side of river.	.28	.31	.34	.37
Suppose exchange price at New York is, per can.....	1.31	1.31	1.31	1.31
Deducting freight and ferrriage leaves presumable net price at farmers' stations, per can.....	.98	1.00	.97	.94
Equal to, cents per quart.....	2.45c	2.5c	2.425c	2.35c

Many farmers sell to a creamery at their local railroad station that is operated by a city dealer, instead of shipping direct to dealers in the city at exchange price. In such cases the farmer often agrees to accept ¼ or ½ cent per quart less than the exchange price. In other words, these farmers get ¼ to ½ cent less than fixed prices. In consideration of this discount, the creamery usually agrees to take all the milk, whereas one who ships to a peddler may have to keep at home his surplus, or accept what it will sell for at auction on the railroad platform at the city terminal, unless the dealer agrees to pay full price for all he sends. If the sup-

ply is overlarge, the exchange reduces the price, so that dealers practically control both ends of the trade. In all cases the producer bears the labor or cost of hauling the milk from the farm to the local shipping station or creamery. In the past year, 1904, commendable progress has been made in New York state in the organization among milk producers of co-operative creameries, and a helpful association of these has been formed. This is known as the Five States Co-operative Creameries Association. The president is D. C. Markham of Port Leyden, N. Y., and the secretary William Hunt, of Great Bend, Pa.

WHOLESALE PRICES OF MILK IN NEW YORK MARKETS.

Year	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	Total	Mo. av.
1904.....	2 $\frac{3}{8}$	2 $\frac{3}{8}$	2	2	2 $\frac{1}{4}$	2 $\frac{1}{2}$	2 $\frac{7}{8}$	3 $\frac{1}{4}$	3 $\frac{1}{2}$	3 $\frac{1}{8}$	3	3	32 $\frac{5}{8}$	2.27
1903.....	3 $\frac{1}{8}$	2 $\frac{5}{8}$	2 $\frac{3}{8}$	2 $\frac{1}{4}$	2 $\frac{1}{4}$	2 $\frac{5}{8}$	3	3	3 $\frac{1}{2}$	3 $\frac{1}{2}$	3 $\frac{1}{2}$	3 $\frac{3}{8}$	34 $\frac{1}{8}$	2.84
1902.....	2 $\frac{7}{8}$	2 $\frac{5}{8}$	2 $\frac{1}{4}$	2 $\frac{1}{4}$	2 $\frac{3}{8}$	2 $\frac{1}{2}$	3	3 $\frac{1}{4}$	3 $\frac{3}{4}$	3 $\frac{3}{8}$	3 $\frac{1}{4}$	3	34 $\frac{1}{2}$	2.88
1901.....	2 $\frac{1}{2}$	2 $\frac{3}{8}$	2	2	2 $\frac{3}{8}$	2 $\frac{1}{2}$	2 $\frac{3}{4}$	3 $\frac{3}{8}$	3 $\frac{1}{2}$	3	2 $\frac{3}{4}$	2 $\frac{5}{8}$	31 $\frac{1}{2}$	2.63
1900.....	2 $\frac{1}{2}$	2 $\frac{1}{4}$	2	2	2 $\frac{1}{2}$	2 $\frac{3}{8}$	3	3	3 $\frac{1}{4}$	3	2	2 $\frac{3}{4}$	32 $\frac{3}{8}$	2.72
1899.....	2 $\frac{1}{4}$	2 $\frac{1}{8}$	2	2	2 $\frac{1}{4}$	2 $\frac{1}{2}$	2 $\frac{7}{8}$	3 $\frac{1}{4}$	3 $\frac{3}{8}$	2 $\frac{3}{4}$	2 $\frac{1}{2}$	2 $\frac{1}{4}$	30 $\frac{3}{8}$	2.53
1898.....	2 $\frac{1}{4}$	2 $\frac{1}{8}$	1 $\frac{3}{4}$	2	2 $\frac{1}{4}$	2 $\frac{1}{2}$	2 $\frac{5}{8}$	3	2 $\frac{3}{4}$	2 $\frac{3}{4}$	2 $\frac{1}{2}$	2 $\frac{3}{8}$	28 $\frac{3}{4}$	2.39
1897.....	2 $\frac{1}{8}$	2	1 $\frac{3}{4}$	2	2	2 $\frac{1}{4}$	2 $\frac{1}{2}$	3	3	2 $\frac{3}{4}$	2 $\frac{5}{8}$	2 $\frac{3}{8}$	—	—
1896.....	2 $\frac{1}{8}$	2	1 $\frac{5}{8}$	2	2 $\frac{1}{8}$	2 $\frac{1}{2}$	2 $\frac{3}{4}$	2 $\frac{3}{4}$	2 $\frac{3}{4}$	2 $\frac{3}{4}$	2 $\frac{3}{4}$	2 $\frac{3}{4}$	27 $\frac{3}{8}$	2.28
1895.....	2 $\frac{1}{4}$	2	2	2	2 $\frac{1}{2}$	2 $\frac{3}{8}$	3	3	3	3	2 $\frac{3}{4}$	2 $\frac{3}{8}$	30 $\frac{1}{2}$	2.54
1894.....	2 $\frac{1}{2}$	2	1 $\frac{7}{8}$	2	2 $\frac{3}{8}$	3	3 $\frac{1}{8}$	3 $\frac{1}{8}$	3	2 $\frac{7}{8}$	2 $\frac{5}{8}$	2 $\frac{5}{8}$	31 $\frac{1}{4}$	2.59
1893.....	2 $\frac{3}{4}$	2 $\frac{3}{8}$	2	2	2 $\frac{1}{2}$	3	3	3	3	3	2 $\frac{3}{4}$	2 $\frac{3}{4}$	33 $\frac{1}{4}$	2.76
1892.....	2 $\frac{1}{2}$	2 $\frac{1}{4}$	2	2	2 $\frac{1}{4}$	2 $\frac{1}{2}$	3	3 $\frac{1}{8}$	3 $\frac{1}{4}$	3 $\frac{1}{4}$	3 $\frac{1}{4}$	3 $\frac{1}{4}$	32 $\frac{1}{2}$	2.71
1891.....	2 $\frac{1}{2}$	2 $\frac{3}{8}$	2	2	2 $\frac{1}{4}$	2 $\frac{1}{2}$	3	3 $\frac{1}{8}$	3 $\frac{1}{2}$	3 $\frac{1}{4}$	3	3	32 $\frac{1}{2}$	2.71
1890.....	2 $\frac{5}{8}$	2	2	2	2 $\frac{3}{8}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$	2 $\frac{7}{8}$	3 $\frac{1}{4}$	3	3	2 $\frac{3}{4}$	30 $\frac{1}{2}$	2.57
1889.....	2 $\frac{1}{2}$	2	2	2	2	2 $\frac{3}{8}$	2 $\frac{1}{2}$	3	3 $\frac{3}{8}$	3 $\frac{1}{4}$	3 $\frac{1}{8}$	3	31 $\frac{3}{8}$	2.59
1888.....	3	2 $\frac{1}{2}$	2	2	2 $\frac{1}{4}$	2 $\frac{3}{8}$	2 $\frac{1}{2}$	3	3 $\frac{1}{4}$	3 $\frac{1}{2}$	3	3	33 $\frac{3}{8}$	2.80
1887.....	3	2 $\frac{1}{2}$	2	2	2 $\frac{1}{2}$	2 $\frac{1}{2}$	3	3 $\frac{1}{2}$	3 $\frac{1}{2}$	3 $\frac{1}{4}$	3 $\frac{1}{2}$	3	35	2.91
1886.....	3	2	2	2	2 $\frac{1}{2}$	2 $\frac{1}{2}$	3 $\frac{1}{2}$	3 $\frac{1}{2}$	3 $\frac{1}{2}$	3 $\frac{1}{2}$	3	3	34 $\frac{1}{2}$	2.87
1885.....	3	2 $\frac{1}{2}$	2	2	2 $\frac{1}{4}$	3	3	3	3 $\frac{1}{2}$	4	3 $\frac{1}{2}$	3 $\frac{1}{4}$	37	3.08
1884.....	3 $\frac{1}{2}$	1 $\frac{1}{2}$	2 $\frac{3}{4}$	3	3	3 $\frac{1}{4}$	3 $\frac{1}{2}$	4	4	3 $\frac{1}{2}$	3 $\frac{1}{2}$	3	39 $\frac{1}{2}$	3.29
1883.....	3	2 $\frac{1}{2}$	2 $\frac{3}{4}$	3	3	3 $\frac{1}{2}$	3 $\frac{3}{4}$	4 $\frac{1}{4}$	4 $\frac{1}{4}$	4 $\frac{1}{4}$	3 $\frac{3}{4}$	3 $\frac{3}{4}$	41 $\frac{1}{2}$	3.45
1882.....	3	2 $\frac{1}{2}$	2 $\frac{1}{2}$	3	3	3 $\frac{1}{2}$	3 $\frac{3}{4}$	3 $\frac{3}{4}$	4 $\frac{1}{4}$	4 $\frac{1}{4}$	3 $\frac{3}{4}$	3 $\frac{3}{4}$	40 $\frac{1}{2}$	3.37
1881.....	3	2	2	2	2	2 $\frac{1}{2}$	3	4	4 $\frac{1}{2}$	4	4	3 $\frac{1}{2}$	39 $\frac{1}{2}$	3.29
1880.....	3	2	2	2	2	2 $\frac{1}{2}$	2 $\frac{1}{2}$	3	4	4	3 $\frac{1}{2}$	3	35 $\frac{1}{2}$	2.95
1879.....	2 $\frac{1}{2}$	2	2	2	2	2	2	2 $\frac{1}{2}$	3 $\frac{1}{2}$	3 $\frac{1}{2}$	3 $\frac{1}{2}$	3	31 $\frac{1}{2}$	2.62
1878.....	3	2	2	2	2 $\frac{1}{4}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$	3	3 $\frac{1}{4}$	3	2 $\frac{1}{2}$	2 $\frac{1}{2}$	30 $\frac{3}{4}$	2.56
1877.....	3	2 $\frac{1}{2}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$	3	4	4	4	4	3 $\frac{1}{2}$	3	38 $\frac{1}{2}$	3.20
1876.....	3	3	2 $\frac{1}{2}$	3	3	3	3 $\frac{1}{2}$	4	4	4	3 $\frac{1}{2}$	3	39 $\frac{1}{2}$	3.29
1874.....	3 $\frac{1}{4}$	3	2 $\frac{3}{4}$	3	3	3 $\frac{1}{4}$	3 $\frac{3}{4}$	4	4	4	4	4	42 $\frac{3}{4}$	3.56
1872.....	4	3	3	3	3	3	4	5	5	5	4	4	46	3.83
1870.....	4	3 $\frac{1}{2}$	3	3 $\frac{3}{4}$	4	4	6	6	6	5	4 $\frac{1}{2}$	4	53 $\frac{3}{4}$	4.47
1868.....	4 $\frac{1}{2}$	3 $\frac{1}{2}$	3	3 $\frac{1}{4}$	4	4	5	6 $\frac{1}{2}$	7	6	6	5 $\frac{1}{4}$	58	4.83

## MAGNITUDE OF NEW YORK MILK TRADE.

[New York department of agriculture.]

Year	Receipts, 40-qt. cans	Year	Receipts, 40-qt. cans
1903.....	17,349,000	1895.....	9,336,827
1902.....	14,814,527	1894.....	9,483,018
1901.....	14,000,000	1893.....	9,303,315
1900.....	13,504,610	1892.....	9,084,781
1899.....	13,121,655	1891.....	8,269,953
1898.....	12,382,106	1890.....	8,141,983
1897.....	10,388,356	1889.....	6,630,278
1896.....	10,975,417	1888.....	6,062,216

## MONTHLY PHILADELPHIA MILK PRICES, PER QUART.\*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total	Mo. av.
1904.....	4	4	4	4	4	3½	3½	3½	3½	4	4½	4½	47	3.91
1903.....	4	4	4	4	4	3½	4	3½	3½	4½	4½	4½	48	4
1902.....	4	4	4	4	4	4	4	3½	3½	4	4½	4½	48	4
1901.....	3½	3½	3½	3½	3½	3	3	3	4	4	4	4	42½	3.54
1900.....	4	3½	3½	3½	3½	3	3½	3½	3½	3½	4	4	44½	3.70
1899.....	3½	3½	3½	3½	2½	2½	3	3	3½	3½	4	4	40	3.33

\*Freight is included in these prices and averages about ½ cent per quart.

## PHILADELPHIA MILK RECEIPTS IN QUARTS.

[In round thousands.]

Year	Penn. R. R.	Reading	Lehigh	B. & O.	Wagons	Total
1903.....	47,985	38,842	10,201	7,015	7,200	111,243
1902.....	44,295	36,836	9,885	6,503	7,200	104,719
1901.....	42,042	37,587	10,340	6,268	7,200	103,437
1900.....	39,821	39,491	10,016	6,029	7,200	102,557
1899.....	38,632	38,243	9,625	5,880	7,200	99,580
1898.....	38,091	34,635	8,688	6,106	7,200	94,720
1897.....	37,101	33,414	8,080	6,384	9,000	93,959
1896.....	38,202	34,971	7,431	6,875	9,000	96,479
1895.....	*40,043	34,054	6,988	6,134	9,000	96,219
1894.....	*39,490	35,945	7,056	6,549	9,500	98,540
1893.....	*39,296	35,484	3,705	6,055	10,000	94,540
1892.....	*38,243	36,749	—	5,687	10,600	91,279
1891.....	*36,204	36,785	—	5,006	10,600	88,595
1890.....	*35,350	37,888	—	5,420	10,600	89,258
1889.....	*32,510	37,390	—	5,236	10,500	85,636
1888.....	*31,079	37,524	—	3,608	10,000	82,211
1887.....	*30,617	36,152	—	1,410	10,000	78,179

\*Philadelphia and Camden receipts included.

MILK PRICES AT BOSTON FOR A PERIOD OF YEARS.

Season	Yearly average			
	Summer, April 1 to October 1	Winter, October 1 to April 1	Per can, 8 1/2 quarts	Per quart
1904-5	37 1/2c	37 1/2c	37 1/2c	4.4c
1903-4	37 1/2c	37 1/2c	37 1/2c	4.4
1902-3	33-34	37 1/2	35 1/2	4.2
1901-2	33	34 1/2-38 1/2	35 1/2	4.2
1900-1	33	37	35	4.1
1899-0	31	33	32	3.8
1898-9	31	33	32	3.8
1897-8	33	33	33	3.9
1896-7	33	35	34	4.0
1895-6	33	37	35	4.1
1894-5	33	37	35	4.1
1893-4	33	37	35	4.1
1892-3	33	37	35	4.1
1891-2	33	37	35	4.1
1890-1	32	36	33	3.9
1889-0	32	38	35	4.1
1888-9	32	38	35	4.1
1887-8	30	36	33	3.9
1886-7	30	36	33	3.9
1885-6	30-32	36-37	34	4.0
1884-5	34	42	32	4.5
1883-4	35	40	39	4.6
1882-3	35	43	38	4.5

MONTHLY CHICAGO MILK PRICES, PER 8-GAL CAN.\*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Aver. p. can	Aver. p. qt.
1904...	\$1.15	\$1.15	\$1.15	\$1.05	\$.75	\$.75	\$.85	\$.85	\$.95	\$.95	\$1.15	\$1.15	\$.99	\$.030
1903...	1.15	1.15	1.10	1.05	.80	.80	.90	1.00	1.00	1.00	1.15	1.15	1.02	.032
1902...	1.10	1.10	1.00	.95	.75	.75	.85	.90	.95	.95	1.15	1.15	.97	.030
1901...	1.10	1.10	.95	.90	.75	.75	.85	.90	.95	.95	1.15	1.15	.96	.030
1900...	1.10	1.10	.95	.90	.75	.75	.85	.85	.95	.95	1.15	1.15	.95	.029
1899...	1.00	1.00	.90	.90	.75	.75	.85	.85	.95	.95	1.15	1.15	.93	.029
1898...	1.00	.80	.80	.80	.65	.65	.75	.85	.90	.90	1.15	1.10	.86	.026
1897...	.90	.80	.75	.65	.65	.65	.70	.75	.80	.85	1.00	1.00	.80	.025
1896...	.90	.90	.75	.70	.65	.65	.75	.75	.80	.85	.85	.80	.78	.024
1895...	.80	.80	.75	.70	.60	.60	.65	.65	.70	.70	.85	.87	.72	.022

\*The above prices are for milk delivered at railroad depot in the city.

## Horses

### DISTRIBUTION OF HORSES.

The distribution, January 1, 1904, in the leading agricultural states and the total number and value of horses in the United States on January 1 of each year since 1895, according to estimates prepared by the statistical bureau of American Agriculturist, are as follows:

#### NUMBER AND VALUE OF HORSES, BY STATES, 1904.

State	Number	Value	State	Number	Value
N. Y. ....	632,000	\$48,032,000	Kan. ....	995,000	\$63,183,000
Pa. ....	597,000	42,984,000	Neb. ....	818,000	50,307,000
Tex. ....	1,274,000	55,483,000	Others ....	6,534,000	364,809,000
Tenn. ....	342,000	22,230,000			
Ky. ....	471,000	28,590,000	Total, '04.	19,213,000	\$1,226,067,000
Ohio ....	1,123,000	80,014,000	1903 ....	19,068,000	1,147,517,000
Mich. ....	604,000	45,300,000	1902 ....	19,015,000	1,031,640,000
Ind. ....	779,000	58,503,000	1900 ....	14,886,000	678,941,000
Ill. ....	1,378,000	100,043,000	1899 ....	14,801,000	599,446,000
Wis. ....	583,000	47,340,000	1898 ....	14,873,000	534,926,000
Minn. ....	758,000	56,850,000	1897 ....	15,623,000	525,723,000
Ia. ....	1,408,000	102,869,000	1896 ....	15,867,000	550,532,000
Mo. ....	916,000	59,540,000	1895 ....	16,082,000	678,897,000

#### FOREIGN TRADE IN HORSES.

Year ended June 30	Exports		Imports	
	No.	Value	No.	Value
1904 .....	42,001	\$3,189,100	4,728	\$1,460,287
1903 .....	34,007	3,152,159	4,998	1,533,796
1902 .....	103,020	10,048,046	4,332	1,577,234
1901 .....	82,250	8,873,845	3,785	985,738
1900 .....	64,709	7,612,056	3,163	596,522
1899 .....	45,778	5,444,342	3,042	541,050
1898 .....	51,150	6,176,569	3,085	414,399
1897 .....	39,352	4,769,285	6,928	464,306
1896 .....	25,126	3,530,703	9,991	662,591
1895 .....	19,984	2,209,298	13,098	1,055,191
1894 .....	5,246	1,108,995	6,166	1,319,572
1893 .....	2,967	718,607	15,451	2,388,267
1892 .....	3,226	611,188	14,074	2,455,868
1891 .....	3,110	784,908	22,537	3,285,254
1890 .....	3,501	680,410	49,116	4,840,485
1888 .....	2,263	412,774	62,411	5,406,363
1885 .....	1,947	377,692	40,255	3,292,297



RECEIPTS OF HORSES AT LEADING POINTS BY YEARS.

[Stated in thousands.]

	1904	1903	1902	1901	1900	1899	1898	1897	1896	1895	1894	1893
Chicago .....	87½	100	102	109	99	112	119	112	106	113	97	82
Kansas City ....	57½	67	77	97	103	34	17	37	53	53	44	35
Omaha .....	44½	52	42	36	60	34	10	7	10	7	8	12
St. Louis .....	150½	128	109	129	145	119	110	83	93	28	13	12
Cincinnati .....	17½	17	8	5	9	5	3	2	4	3	4	5
Indianapolis ....	27½	34	36	33	33	28	30	30	23	18	8	7
St. Paul .....	4½	12	19	18	31	8	1	†	†	†	†	1
St. Joseph, Mo..	24½	7	8	15	27	6	1	†	†	†	†	1
St. Joseph, Mo..	24½	20	20	23	14	9	11	3	3	2	1	2
Denver .....	12½	16	24	17	23	10	5	2	3	3	6	8

†Less than 1000 head. †Jan. 1 to Nov. 10. †Jan. 1 to Oct. 1.

IMPORTS OF ANIMALS, MEAT AND DAIRY PRODUCTS INTO UNITED KINGDOM.

[Stated in round thousands.]

Calendar Year	Cattle, No.	Sheep, No.	Bacon and hams, cwts.	Beef, fresh, cwts.	Beef, salted, cwts.	Butter, cwts.	Margarine, cwts.	Cheese, cwts.
1904*	462	307	5573	3663	119	3602	774	2098
1903	522	354	6296	4100	173	4041	832	2694
1902	419	233	6571	3707	153	3975	966	2546
1901	496	384	7632	4509	204	3703	963	2537
1900	496	383	7443	4123	193	3879	920	2706
1899	504	608	7732	3803	173	3890	953	2334
1898	569	664	7883	3101	209	3209	901	2339
1897	618	612	6729	3010	175	3218	937	2603
1896	562	770	6009	2660	247	3033	926	2245
1895	416	1065	5353	2191	220	2826	940	2134
1894	475	485	4819	2104	342	2575	1109	2266
1893	340	63	4187	1808	201	2827	1300	2077
1892	502	79	5135	2080	275	2133	1305	2233
1891	507	345	4715	1921	243	2136	1235	2941
1890	643	358	5000	1855	275	2022	1080	2144
1889	555	678	4484	1396	262	1923	1242	1908
1888	377	956	3594	327	237	1671	1140	1918
1887	296	971	3923	656	213	1513	1276	1837
1886	320	1039	4211	807	191	1544	838	1735
1885	373	751	4053	903	239	12401	—	1834
1884	426	945	3418	873	212	2475	—	1927
1883	475	1118	3696	805	239	2334	—	1800
1882	344	1134	2904	464	238	2170	—	1695
1881	319	935	4627	817	251	2047	—	1840

\* Ten months ended Oct. 31. † Includes "margarine."

### DURATION OF PREGNANCY IN THE MARE

usually varies from 340 to 360 days, but mares have been known to carry their foal 30 or 40 days longer or shorter than this period. The average is 344 days, and the table is made on that basis.

Under "breed," find date mare was served; figure in next column to the right, headed "due," is the day she is due to foal.  
Twenty-one days after being first served, the mare should be again put to the stallion. If she then accepts service, she should be again returned 21 days later, or 42 days from first service.

BREED	DUE		DUE		DUE		DUE		DUE		DUE		DUE		DUE		DUE		DUE		DUE					
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.		
1	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	
2	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5
3	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6
4	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7
5	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8
6	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9
7	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10
8	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11
9	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12
10	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13
11	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14
12	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
13	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
14	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
15	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
16	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
17	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
18	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
19	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
20	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
21	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
22	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
23	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
24	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
25	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
26	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
27	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
28	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
29	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1
30	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2
31	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3

EXPORTS DOMESTIC ANIMALS AND MEAT PRODUCTS

FROM UNITED STATES.

[Stated in round millions.]

Year ended June 30	Cattle, *No.	Hogs, *No.	Horses and mules, *No.	Sheep, *No.	Canned beef, lbs.	Fresh beef, lbs.	Salted beef, lbs.	Tallow, lbs.	Bacon, lbs.	Hams, lbs.	Pickled pork, lbs.	Lard, lbs.	Oleomar-garine, lbs.	Onion oil, lbs.	Butter, lbs.	Cheese, lbs.	Eggs, doz.
'04..	593	6	46	301	57	299	57	76	249	194	112	561	171	165	11	23	1776
'03..	402	4	38	177	76	254	52	27	207	214	95	491	133	126	9	19	1517
'02..	393	8	131	358	67	301	49	34	383	228	116	557	144	139	16	27	2717
'01..	459	22	116	298	53	351	55	77	456	217	139	611	166	162	23	40	3692
'00..	397	51	108	125	56	329	47	89	512	196	133	662	151	147	18	48	5920
'99..	389	33	52	143	38	282	47	107	563	226	137	711	148	142	20	38	3693
'98..	439	14	59	200	37	275	44	82	650	200	88	709	137	133	26	53	2754
'97..	392	29	40	244	54	290	69	75	500	165	67	568	5	114	31	51	1300
'96..	372	21	31	492	64	225	71	53	425	129	69	510	6	103	19	37	328
'95..	332	7	16	406	64	191	62	26	453	105	58	475	10	78	6	30	151
'94..	359	2	7	132	56	194	63	55	417	87	64	448	4	123	12	74	163
'93..	237	27	4	37	79	206	58	62	392	82	52	366	3	114	9	81	143
'92..	375	96	5	61	110	194	90	112	515	84	81	498	2	80	15	82	363
'89..	206	45	7	129	51	138	55	78	357	43	64	318	2	26	16	35	549
'87..	106	75	3	122	43	84	36	63	364	56	86	322	1	46	13	81	373

\* Expressed in thousands.

IMPORTS, ANIMALS AND MEAT PRODUCTS.

[Stated in round thousands.]

Year ended June 30	Cattle, No.	Horses, No.	Sheep, No.	Eggs, doz.	Hides, skins, dollars	Butter, lbs.	Cheese, lbs.
1904	16	5	238	497	52,006	154	22,707
1903	66	5	301	368	58,031	207	20,671
1902	96	2	267	384	58,006	454	17,068
1901	146	4	331	127	48,220	94	15,329
1900	181	3	382	135	57,926	42	13,445
1899	200	3	346	225	41,988	24	11,826
1898	292	3	392	166	37,069	32	10,012
1897	329	7	406	580	27,863	38	12,319
1896	218	10	323	947	30,520	52	10,728
1895	150	13	291	2,706	27,033	72	10,276
1894	2	6	243	1,791	16,796	144	8,743
1893	3	15	459	3,318	28,348	73	10,196
1892	2	14	381	4,188	26,850	144	8,305
1891	12	22	346	8,233	27,931	381	8,864
1890	62	59	405	15,919	25,128	179	8,297
1887	87	56	480	13,936	24,219	236	6,592

***Agricultural Topics*****THE COTTON BOLL WEEVIL.**

This destructive insect entered Texas from Mexico at Brownsville, on the Rio Grande river, about 11 or 12 years ago, and by 1894 had become a serious enemy to the cotton crop in that vicinity. In 1895 it had spread as far north as San Antonio, and by 1898 it appeared in many counties in central Texas. In 1903 it covered two-thirds of the state and was found in isolated colonies in adjacent sections. It has appeared at two points in Louisiana, on the Texas border. The accompanying map shows its present distribution.

The insect is very destructive, reducing the crop fully 50 per cent wherever it has become established. It is estimated that the money loss of the

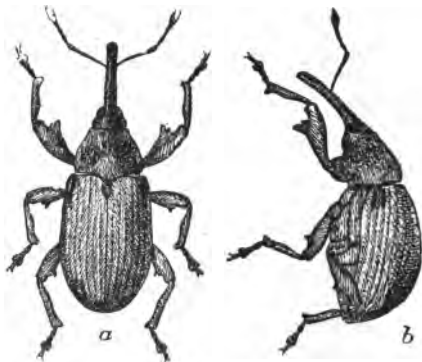


Fig. 1—Cotton boll weevil; *a*, beetle, from above; *b*, same from side—about five times natural size (original).

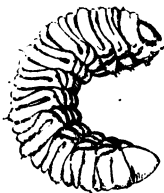
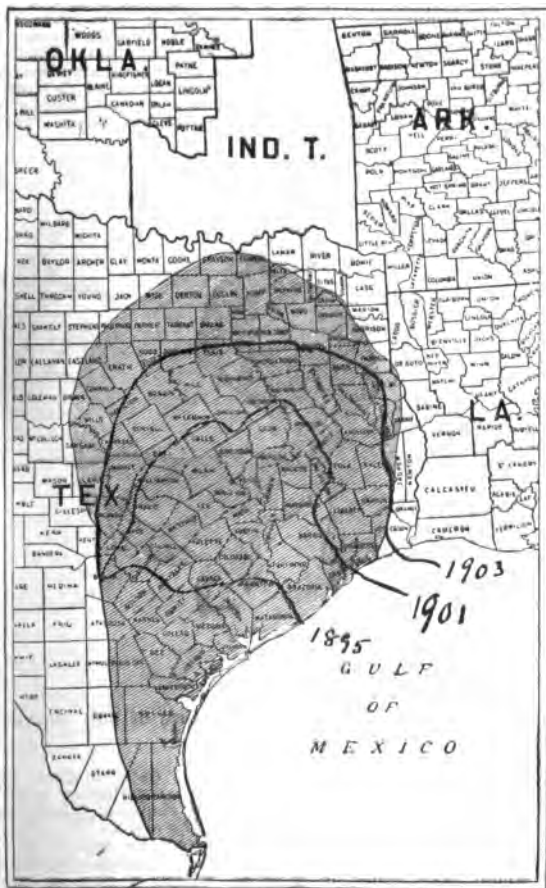


Fig. 2—Cotton boll weevil; larva at left; pupa at right—about five times natural size (original).

The adult weevil averages about one-quarter of an inch in length and has a beak about one-half the length of the body. It is of grayish or reddish-brown color. Its general appearance

Texas growers caused by weevil in 1903 was \$15,000,000. The state of Texas has appropriated funds for the investigation and destruction of the weevil since 1898, and the United States government since 1901. Cotton growers throughout the affected portions of Texas have held many conventions to devise means of combating this enemy. The insect threatens to spread to all cotton growing sections of the country.



Map showing gradual distribution of cotton boll weevil. The shaded portion outside the 1903 line indicates the region in which isolated colonies are known to exist.

will be understood from Fig. 1. The insect exists in four stages—egg, larva, pupa and adult (Fig. 2). All the stages except the last occur only inside of the cotton square or boll. The egg is deposited by the female weevil in a cavity formed by eating into the fruit of the plant (Fig. 3). It hatches, under normal conditions, in two or three days, and the grub immediately begins to feed. In from seven to 12 days the larva or grub passes into the pupal or quiet stage, corresponding to the cocoon of the silkworm. This stage lasts from three to five days. Then

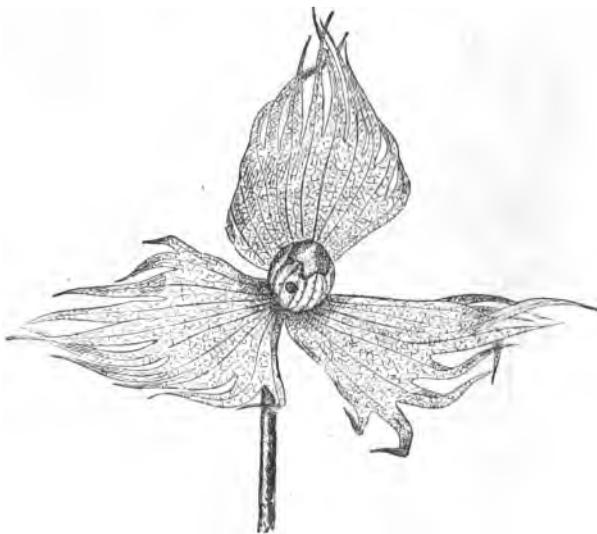
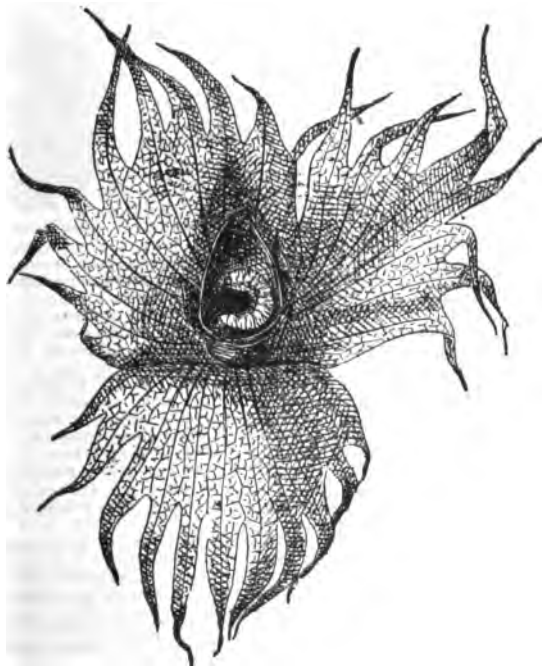


Fig. 3—Cotton square showing egg puncture of boll weevil—natural size (original).

the adult weevil issues, and in about seven days begins the production of another generation. Climatic conditions cause considerable variations, but on an average it requires from two to three weeks for a weevil to develop from the egg to the adult.

The plainest indication of the presence of the weevil in a cotton field is in the flaring (Fig. 4) and falling of the squares or forms which take place, in general, within a day or two after the egg is deposited. However, as all planters are aware,

heavy rains after drouth, as well as some other climatic conditions, have the same effect upon the plants. If the planter should observe an unusual shedding of the fruit he may easily determine the cause by gathering a few of the fallen squares. If upon cutting open these squares he finds a small, whitish, curved grub, there is but little doubt that the cause of the



**Fig. 4—Cotton square showing boll weevil larva in position—natural size (original).**

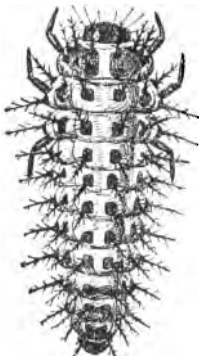
trouble is the boll weevil. The specimen should then be sent to an entomologist for final determination.

No satisfactory means of destroying the weevil by poisons or insecticides have been found, because it is protected by the

cotton square or boll, within which it hatches. But it has been ascertained that by planting early varieties and hastening maturity by early planting, good cultivation and fertilizing, the crop will be made before the weevil appears in large numbers. Planting in rows 4 or 5 feet apart is also advocated, that the worms in the fallen bolls may be destroyed by drying by sunshine. As soon as the crop is gathered, the cotton stalks should be burned. If the stalks are not destroyed, the weevil will live over winter and appear in destructive numbers the following season unless the winter has been very wet and the succeeding summer is very dry.

### SAN JOSE SCALE.

The pernicious or San Jose scale was found in destructive numbers in many California orchards in 1880. It is supposed to have been brought to that state about 1870 on plants received from China. In 1893 it was discovered in Virginia, and in New Jersey in 1894. It probably was scattered through many states by infected nursery stock before its presence was suspected. It is now firmly established in almost all fruit sections.



Young of Chinese  
Lady-Beetle.

The scale is the most serious orchard enemy ever encountered. It is so insignificant, so nearly the color of bark, that it may spread over an entire orchard before the owner knows what it is. It multiplies in summer and fall with astonishing rapidity and destroys by sucking the juices of the plant. It is dormant in winter and is not killed by severe cold. It is spread from tree to tree on the feet of birds and perhaps by the wind. An infested tree generally dies in three years and sometimes sooner.

The scale is destroyed by hydrocyanic acid gas, and in many states nurserymen are compelled by law to fumigate all stock with this gas before shipping. Nurseries are also inspected by state entomologists annually. Where such precautions are followed, there is little danger of young trees being infested. But the scale is already so generally disseminated that fruit growers cannot expect to escape it.

The most available and satisfactory means of destroying the scale in an orchard is by spraying the trees in winter or early spring with a solution of lime, sulphur and salt; this must be applied hot. Crude petroleum, kerosene emulsion and whale oil soap and potash are also used. Lime and sulphur combine in equal quantities to form a sulphide, which is the destructive element of the compound. Frequently an excess



of lime is used to insure perfect combination. A proper formula is: Lime 20 pounds, sulphur flour 15 pounds, salt ten pounds, water 50 gallons. This is made by slaking the lime with hot water and then mixing the sulphur with it, forming a paste free from lumps. This is poured into a pot of water and boiled for two hours, the salt is added and the material strained into a spraying barrel and applied. Another well-known formula is: 50 pounds lime, 50 pounds sulphur and 50 pounds salt, with 150 gallons of water. It is claimed that the mixture can be made without boiling by adding two pounds of caustic potash to the mixture; the potash generates a great heat.



Chinese Lady-  
Beetle.

One of the natural enemies of the San Jose scale is an Asiatic ladybird, *Chilocorus similis*, recently imported by the United States department of agriculture from China. Many colonies of this insect have been sent to experiment stations and individuals having large orchards. The results have not been generally satisfactory. However, in some of the southern states, particularly Georgia, the little beetle seems to be thriving. Because of adverse natural conditions this insect does not multiply as rapidly in our central and northern states as in the more congenial southern environments. There is, however, encouraging promise that this friendly insect may eventually become established in some sections and that it may be a factor in holding the scale in check to some extent.

#### COMPETITION IN TROPICAL AGRICULTURE.

It is undoubtedly true that the near future is to see a new form of competition for American producers. This will be due to the great enlargement of agricultural production in the tropics. The unlimited fertility of the soil and climate in Cuba, Porto Rico, the Philippines and other tropical countries, makes it possible for those sections to produce sugar, tobacco, rice, cotton and many other crops at vastly less cost than these crops can be produced for in the United States.

Whether such tropical produce shall be admitted into the United States duty free, or at reduced rates of duty, will be one of the great economic issues of the next few years. Our domestic farmers will have to decide whether they want to meet such tropical competition without any protest, or whether they will insist upon high tariff protection against it, just as manufacturers of iron, steel and other goods have been protected against foreign competition.

The prospects of tropical development were emphasized in an address to the international geographical congress New York, September 13, 1904, by O. P. Austin, chief United States bureau of statistics, who said:

The 20th century duty of commerce and geography combined is the development of the tropics. The temperate zones

have during the last century been pretty well developed, especially the north temperate zone, and they have become the producers of more than three-fourths in value of the products entering into international commerce. While the temperate zones have one-half the world's population, they furnish much more than one-half of its natural products and nearly all of the manufactures, and supply more than three-fourths of the merchandise which enters into international commerce.

On the other hand, the tropics with the other half of the world's population and by nature the most productive section, supply in fact less than one-fourth of that which enters into international commerce. The world is demanding tropical products in rapidly increasing quantities. The value of tropical products imported into the United States at the present time is about 430 million dollars a year, against 140 millions in 1870. This is a threefold gain in value, while the fact that prices have fallen more than one-half in most of these articles meantime, indicated that the quantity of tropical products now imported is fully six times as great as in 1870.

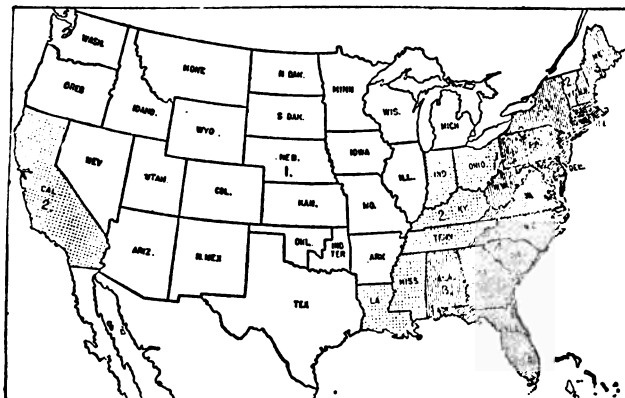
The United States draws its chief supply of sugar from the tropics, while European countries produced it in the temperate zone from beets. Even in sugar it seems not improbable that the application in the tropics of the same high degree of skill now applied to sugar production in the temperate zones might produce sugar in the tropics at such low cost as to permit the temperate zones to again utilize for the production of bread-stuffs some portion of the lands now devoted to sugar, and thus adjust production to natural conditions of soil and climate in both the temperate and the torrid zones.

The great causes of delay in development of the tropics were their unhealthfulness for whites from the temperate zone, difficulty of applying mechanical power to the development, indisposition of native races to labor, and uncertainty as to governmental protection for life and investment. In all of these, conditions have greatly improved in recent years.

#### VALUE OF IMPORTS AND EXPORTS OF POULTRY AND GAME, 1884 TO 1904.

Fiscal year	Imports of poultry and game	Exports of poultry and game	Fiscal year	Imports of poultry and game	Exports of poultry and game
1904	—	\$1,009,304	1893	\$525,269	\$61,094
1903	—	1,079,056	1892	307,752	37,983
1902	—	856,801	1891	357,927	34,340
1901	—	1,070,190	1890	413,491	120,725
1900	\$311,638	753,399	1889	392,712	95,968
1899	265,032	505,540	1888	358,204	67,632
1898	239,681	335,914	1887	305,402	68,687
1897	211,122	140,853	1886	338,840	87,315
1896	226,500	80,399	1885	280,123	97,012
1895	233,416	69,287	1884	590,791	69,618
1894	274,789	71,830			

## Fertilizers



### USE OF FERTILIZERS ILLUSTRATED.

In the unshaded states, less than 1 per cent of the average annual value of crops is expended for commercial fertilizers; (2) lightest shading, 1 to 3 per cent; (3) medium shading, 3 to 5 per cent; (4) darkest shading, 5 to 10 per cent. Yet it is probable that the average farm profits are greatest in the sections where the largest proportion of the crop goes for fertilizing purposes.

### NUMBER OF POUNDS OF FERTILIZER REQUIRED PER ACRE APPLIED IN ROWS.

If 10 pounds of fertilizer are used for 100 yards of row, and the rows are 18 inches apart, then 980 pounds of fertilizer will be needed per acre, and so on.

No. lbs. p. 100 yds. of row	18 in.	2 ft.	2½ ft.	2¾ ft.	3 ft.	3½ ft.	4 ft.	4½ ft.	5 ft.
10	980	735	590	530	490	420	370	325	295
15	1470	1100	890	800	735	630	550	490	440
20	1960	1470	1175	1065	980	820	735	655	590
25	2450	1840	1470	1330	1225	1050	920	815	735
30	2940	2205	1765	1595	1470	1260	1105	990	890
35	3430	2575	2060	1865	1715	1470	1285	1145	1030
40	3920	2940	2350	2130	1960	1680	1470	1305	1175

## FORMULAS FOR MIXING AGRICULTURAL CHEMICALS.

[As used by many farmers and analyzed by various experiment stations.]

No. formula	Crop for which each fertilizer is intended	Composition of mixtures							Analyses, per qt of lbs. of each element in 100 lbs. of each formula			
		Dissolved boneblack, lbs.	Tankage, lbs.	Sulphate of ammonia, lbs.	Muriate of potash, lbs.	Ground bone, lbs.	Sulphate of potash, lbs.	Nitrate of soda, lbs.	S. C. phosphate rock, lbs.	Nitrogen	Phos. acid	Pot. ash
1	General use....	334	686	208	292	—	—	—	—	4.	9.	7.6
2	General use....	1000	450	170	280	200	—	—	—	3.	10.	7.3
3	General use....	400	—	200	200	400	—	—	—	3.	12.	5.2
4	General use....	1050	750	—	100	—	—	—	—	3.	10.	2.6
5	Potatoes .....	400	‡200	200	200	400	100	100	400	3.4	10.	7.4
6	Potatoes .....	900	‡200	200	—	—	450	250	—	4.8	8.	11.
7	Potatoes .....	900	500	—	—	—	450	250	—	3.4	8.	11.
8	Potatoes .....	800	500	400	—	—	675	250	—	5.8	6.	12.
9	Potatoes .....	500	750	—	200	—	300	350	—	4.	5.3	12.
10	Wheat, oats, rye, corn .....	600	‡100	50	150	—	—	100	—	2.	10.	7.3
11	Corn .....	1000	500	300	250	700	—	—	—	3.	8.	4.
12	Oats .....	120	—	—	160	—	—	120	120	3.	9.	13.
13	Rye .....	280	‡320	—	160	—	—	—	280	2.	8.	8.6
14	Barley .....	140	—	235	65	—	—	—	—	10.	5.	7.
15	Buckwheat .....	160	—	—	100	—	—	160	160	5.	9.	12.
16	Fruit trees .....	425	—	50	100	—	—	—	—	1.	10.	9.
17	Mkrt gardening .....	700	—	—	400	700	—	200	—	1.	9.	10.
18	Tomatoes .....	320	—	—	160	—	—	160	—	3.	8.	11.
19	Melons .....	300	—	—	100	—	—	200	800	2.	18.	4.
20	Cabbage .....	448	—	—	—	112	—	224	—	4.	11.	—
21	Beans .....	500	‡100	50	250	—	—	—	—	2.	9.	14.
22	Beets .....	100	—	100	100	—	—	100	100	7.	8.	14.
23	Clover .....	300	—	—	*400	—	—	100	—	1.8	6.	6.
24	Cotton .....	200	‡100	—	*300	—	—	—	200	1.	8.	6.
25	Tobacco .....	—	—	—	—	—	180	140	260	3.	11.	1.5

\* Kainit. † Cottonseed meal. ‡ Dried blood. § Ground fish.

|| This was used at the south. The popular mixture in the Connecticut valley for raising prime cigar wrapper leaf tobacco is cottonseed meal 2000 pounds, high grade cotton hull ash 1000 pounds, oyster shell lime 500 pounds, land plaster or gypsum 500 pounds, on each acre. Various modifications of the formula are used.

Alr-slaked lime, as has been observed in other experiments, has had a wonderfully beneficial effect in connection with certain plants, which has been attributed by us not only to its direct fertilizing action, but also largely to its having overcome the acidity of the soil or to its having effected the decomposition of constituents of the same which exerted an injurious influence upon the growth of certain plants.

## Irrigation

### THE NATIONAL IRRIGATION LAW.

It is entitled "an act appropriating the receipts from the sale and disposal of public lands in certain states and territories to the construction of irrigation works for the reclamation of arid lands." It was approved June 17, 1902 (32 Stat., 388). This law is one of the most important ever enacted by Congress. The law has stood the test of experience. The act is very general and allows wide executive discretion in its application. Experience shows that the law should be left alone until some of the works authorized have been actually constructed and lands reclaimed. Then will be time enough to consider whether any radical changes are required.

The law provides that all moneys received from the sale and disposal of public lands in Arizona, California, Colorado, Idaho, Kansas, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Utah, Washington and Wyoming shall be set aside in the national treasury as a reclamation fund. This fund is to be used "in the examination and survey for and the construction and maintenance of irrigation works for storage, diversion and development of waters, including artesian wells, for the reclamation of arid and semi-arid lands in the said states and territories."

This fund now amounts to nearly 30 millions of dollars. Lands needed for irrigation works, or to be reclaimed by these works, may be withdrawn from homestead entry or sale, until the feasibility of such works is decided upon. Lands irrigated by government works are reserved to actual settlers in tracts of not less than 40 or more than 160 acres. The cost of constructing irrigation works is apportioned upon the land thus reclaimed. The settler is entitled to acquire such land at said price, payment to be made in ten equal annual installments. When these payments have been completed for the major portion of the lands irrigated, the management and operation of the irrigation works shall pass to the owners of the lands irrigated, and the works are to be maintained at their expense. This permits the government not only to construct, but to operate the works for a period sufficiently long to get everything in good working order. The management then can pass gradually into the hands of an association of the water users.

Thus the settler, in the course of time, returns to the government every dollar it spends in constructing the irrigation works. Thereafter the owners of the land irrigated operate such works in their own interest, and simply have to pay the bare cost of maintenance. This insures an ample supply of water to the land owner at bare cost. Title to the water goes with the land, and no middleman or corporation can take it away.

Since government derives the capital of the reclamation fund from the sale of public lands, and has the money returned to

it from year to year to be used in additional works, this great system involves no expense whatever to the taxpayers of the country. It provides lands and waters for actual settlers at actual cost, but makes the water inhere to the land. The new law also provides for its operation with due regard to the statutes of the different states. It virtually divides the fund derived from the sale of land in each state, so that 51 per cent of the fund must be expended within said state if there are sufficient feasible irrigation projects therein, while the other 49 per cent can be expended in any one of the states or territories.

Under this law an immense amount of work has already been done by the reclamation services of the department of the interior, with headquarters at Washington, D. C. This work consists largely of surveys and measurements of water, but now various irrigation works are under actual construction. Full particulars of the lands open to settlement under each of these irrigation projects may be obtained, free of cost, by addressing Reclamation Service, Washington, D. C.

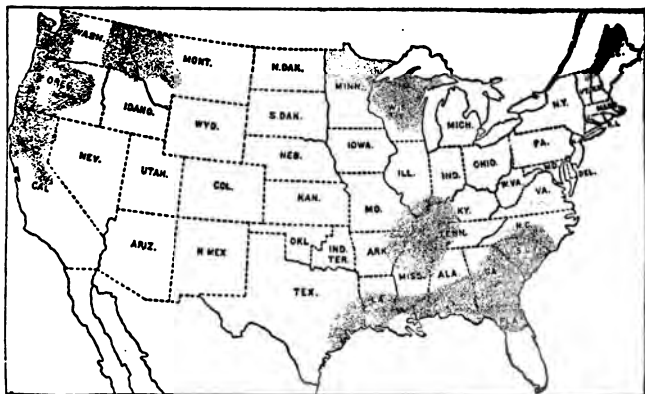
### STEALING THE PUBLIC LANDS.

The federal irrigation law promises to be of the utmost beneficence. It should be supplemented by such reforms of the public land laws, and such improvements in the laws pertaining to forestry, as will forever insure that the remaining public lands and forests shall be conserved and administered in the interest of actual settlers and the public welfare, as thoroughly as the irrigation law aims to conserve the public interest in the land and waters reclaimed under the provisions of this law.

The forests of the west are being located by timber thieves and timber speculators under the timber and stone act. The fertile lands which should be reserved for the home-maker are being located by speculators and stockmen who have no thought or purpose of ever making a home upon them. Under the desert land act the public domain is being butchered and gutted, and hundreds of thousands of acres of irrigable lands are being annually absorbed into private ownership in the hands of those who will either devote them to the raising of live stock, and make of them ranges for cattle and sheep, or hold them in speculative hands against the day when the home-buider will want the land, or when the government will want it to reclaim for the home-maker. And under the commutation clause of the homestead act, the hobo locator, the cowboy or the sheep herder, who is the tool of the big live stock outfit, the other lands are fast being absorbed, to be fenced in with barbed wire fences against the incoming settler.

Particulars about public lands available for entry under the various land laws now existing may be obtained upon application to the commissioner of the general land office, Washington, D. C. In a few of the western states considerable areas are still the property of the state. Texas has the greatest wealth in such state lands.

## Forestry



PRINCIPAL FOREST AREAS IN THE UNITED STATES.

The rapid diminution of American forests is emphasized by the above map. The constant upward tendency in prices of all lumber emphasizes the seriousness of the forestry question. It is of the utmost importance that both state and federal governments co-operate in a policy that will encourage the development of new forests and the best care of existing forests.

### ARBOR DAY OBSERVANCE.

State	When first observed	Annual observance
Alabama	.....1887	February 22.
Alaska	.....	Not observed.
Arizona	.....Feb. —, 1895	Friday following 1st day of Apr., also Friday following 1st day of Feb.
Arkansas	.....Dec. 15, 1895	Dec. 15 (irregularly observed).
California	.....	Observed by separate counties, but not generally.
Colorado	.....1890	Third Friday in Apr.
Connecticut	.....1886	Appointed by governor, last Friday in Apr. or first in May
Delaware	.....1901	Appointed by governor, usually in Apr.

## ARBOR DAY OBSERVANCE—Continued.

State	When first observed	Annual observance
District of Columbia.....		Not observed.
Florida .....	Feb. 9, 1886	First Friday in Feb.
Georgia .....	1890	First Friday in Dec.
Idaho .....	1886	Last Monday in Apr.
Illinois .....	1888	Date fixed by governor and supt. of public instruction.
Indian Territory .....		Not observed.
Indiana .....	1884	Last Friday in Oct.
Iowa .....	1887	Date fixed by proclamation of governor.
Kansas .....	1875	Do.
Kentucky .....	1894	Not regularly observed.
Louisiana .....		Not observed.
Maine .....	1887	Date fixed by proclamation of governor, usually early in May.
Maryland .....	Apr. 10, 1889	In Apr.; date fixed by proclamation of governor.
Massachusetts .....	1886	Last Saturday in Apr.
Michigan .....	Apr. —, 1885	Last Friday in Apr.
Minnesota .....	1895	Date fixed by proclamation of governor, usually last of Apr. or first of May.
Mississippi .....	Dec. 10, 1902	Dec. 10.
Missouri .....	Apr. 16, 1886	Friday after 1st Tuesday in Apr.
Montana .....	Mar. 11, 1895	Second Tuesday in May.
Nebraska .....	Apr. 10, 1872	Apr. 22.
Nevada .....	1887	Date fixed by proclamation of governor, usually in Apr.
New Hampshire .....	1885	No date fixed, usually in May.
New Jersey .....	Apr. 18, 1884	Usually third Friday in Apr., appointed by governor.
New Mexico .....	Feb. 16, 1891	Second Friday in Mar.
New York.....	May 3, 1889	Friday following 1st day of May.
North Carolina.....		Oct. 12, usually observed.
North Dakota.....	May —, 1890	First Friday in May.
Ohio .....	Apr. 27, 1882	Second or third Friday in Apr.
Oklahoma .....		Second Friday in Apr.
Oregon .....	Apr. —, 1887	Appointment by governor in Apr. or May.
Pennsylvania .....	1887	In Oct.; appointment by supt. of instruction.
Rhode Island.....	Apr. 29, 1886	Second Friday in May.
South Carolina.....	Nov. —, 1899	Third Friday in Nov.
South Dakota .....		Date fixed by governor.
Tennessee .....	1887	Date fixed annually in Nov.
Texas .....	Feb. 22, 1889	Feb. 22.
Utah .....	1896	Apr. 15.
Vermont .....	1885	Latter part of Apr. or first of May.
Virginia .....	1892	



## ARBOR DAY OBSERVANCE—Continued.

State	When first observed	Annual observance
Washington .....		Irregularly observed; date set by governor; different dates east and west of the Cascades.
West Virginia .....	1881	Third Friday in Apr. and third Friday in Nov.
Wisconsin .....	1889	Date fixed by governor.
Wyoming .....	1888	Do.

## *Fisheries*

### PROPAGATION AND DISTRIBUTION OF FOOD FISHES.

The necessity of maintaining the fish supply in public and private waters is becoming more urgent each year, and the applications for all kinds of fish now greatly exceed those of a few years ago, taxing to the utmost the resources of the various hatcheries. In order to keep pace with the increased catch by commercial fishermen and anglers, the establishment of additional hatcheries from time to time is demanded, and larger appropriations are required to operate existing hatcheries to their full capacity.

The number of fish and fertilized ova distributed in 1903 was somewhat less than in the previous year, the decrease being due to seasonal conditions which could not be foreseen or obviated; the distributions were as follows: Eggs 182,238,373, fry 1,036,988,743, fingerlings, yearlings and adults 6,830,359, total 1,226,067,475.

### FISHING STATIONS.

The following stations, some of which are auxiliary, are operated by the commission: Green Lake, Me.; Craig Brook, Me.; Grand Lake Stream, Me.; Nashua, N. H.; St. Johnsbury, Vt.; Swanton, Vt.; Gloucester, Mass.; Woods Hole, Mass.; Cape Vincent, N. Y.; Steamer Fish Hawk (Delaware river); Battery, Md.; Bryans Point, Md.; Fish Lakes, D. C.; Wytheville, Va.; White Sulphur Springs, W. Va.; Erwin, Tenn.; Cold Springs, Ga.; Edenton, N. C.; Weldon, N. C.; Put in Bay, O.; Northville, Mich.; Detroit, Mich.; Sault Ste Marie, Mich.; Charlevoix, Mich.; Alpena, Mich.; Quincy, Ill.; Manchester, Ia.; Bellevue, Ia.; Neosho, Mo.; San Marcos, Tex.; Leadville, Col.; Spearfish, S. D.; Bozeman, Mont.; Baird, Cal.; Battle Creek, Cal.; Mill Creek, Cal.; Clackamas, Ore.; Little White Salmon, Ore.; Big White Salmon, Ore. Eagle and Tanner creeks, Ore.; Rogue River, Wash.; Baker Lake, Wash.; Birdview, Wash.

Lobster was cultivated at two fishing stations in 1903, cod at two, flatfish two, shad four, pike perch two, yellow perch two, whitefish seven, lake trout five, salmon 11.

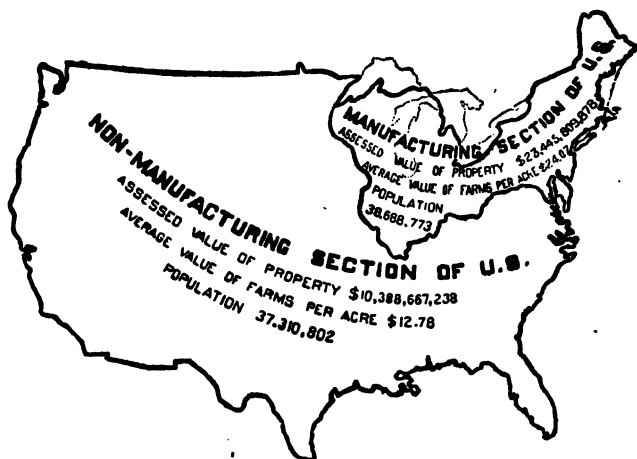
## AREA, POPULATION AND INDUSTRIES OF THE UNITED STATES.

	1800	1850	1880	1890	1900	1910
Area in millions of square miles.....	1	2	3	3	3	3
Population, in millions.....	5	23	50	62	76	90
Wealth, total, billions of dollars.....	—	7	42	65	94	105
Wealth per capita.....	—	307	850	1038	1235	—
Debt, total, millions of dollars.....	82	63	1919	890	1107	925
Debt, dollars per capita.....	15	2	38	14	14	11
Interest-bearing debt, millions of dollars.....	82	63	1723	725	1023	914
Annual interest charge, millions of dollars.....	—	—	79	29	33	25
Gold coined, millions of dollars.....	—	31	62	20	99	43
Silver coined, millions of dollars.....	—	1	27	39	36	19
Gold circulating, millions of dollars.....	—	—	225	374	610	617
Silver circulating, millions of dollars.....	—	—	68	110	142	165
Gold certificates circulating, millions of dollars.....	—	—	7	130	200	377
Silver certificates circulating, millions of dollars.....	—	—	5	297	408	454
United States notes outstanding, millions of dollars.....	—	—	327	334	313	334
National bank notes outstanding, millions of dollars.....	—	—	337	181	300	398
Circulation, dollars per capita.....	5	12	19	22	26	29
National banks, number thousands.....	—	—	2	3	3	4
National banks, capital, millions.....	—	—	455	642	621	743
Bank clearings, New York, billions of dollars.....	—	—	37	37	51	54
Bank clearings, total United States.....	—	—	—	58	84	114
Deposits in national banks, millions of dollars.....	—	—	833	1521	2453	3200
Deposits in savings banks, millions of dollars.....	—	43	819	1624	2449	2956
Depositors, savings banks, number in thousands.....	—	251	2335	4253	6107	7306
Farms and farm property, value in billions.....	—	3	12	16	3	4
Farm products, value in billions.....	—	2	2	3	2	—
Manufacturing establishments, number in thousands.....	—	—	—	—	—	—
Value manufactured products, billions of dollars.....	—	123	253	355	512	—
General receipts, ordinary, millions of dollars.....	—	1	5	9	13	—
Customs receipts, millions of dollars.....	10	43	333	403	567	560
Internal revenues, millions of dollars.....	9	39	186	229	233	284
Expenditures, net ordinary, millions of dollars.....	—	—	124	142	295	230
War department expense, millions of dollars.....	7	37	169	261	447	477
War department expense, millions of dollars.....	2	9	38	44	134	118

Navy department expense, millions of dollars.....	3	7	12	22	55	82
Pensions, millions of dollars.....			56	106	140	138
Interest on public debt, millions of dollars.....	3	3	95	36	40	28
Imports of merchandise, millions of dollars.....	91	173	687	789	849	1025
Imports, dollars per capita.....	13	6	16	13	13	17
Exports of merchandise, millions of dollars.....	70	144	835	857	1394	1420
Imported raw silk, millions of pounds.....		2	1	7	13	15
Imported crude rubber, millions of pounds.....		16	33	33	49	55
Imported tin plates, millions of pounds.....		379	680	680	147	109
Imported iron, steel and manufactures, millions of dollars.....	20	71	41	29	51	51
Exported iron, steel and manufactures, millions of dollars.....	25	108	685	629	835	873
Agricultural products exported, millions of dollars.....	2	17	102	151	483	407
Manufactures exported, millions of dollars.....		544	1576	2418	2228	3102
Farm animals, value in millions of dollars.....		17	33	52	43	61
Cattle, number in millions.....		4	11	14	13	16
Horses, number in millions.....		21	40	44	41	63
Sheep, number in millions.....		1	2	2	2	2
Mules, number in millions.....		30	34	51	37	46
Swine, number in millions.....		50	36	32	79	74
Gold product in millions of dollars.....		50	39	70	74	73
Silver product in millions of dollars.....		3	63	140	240	18
Coal product in millions of tons.....		3	3	9	13	18
Pig iron product in millions of tons.....		1	1	4	10	—
Steel product in millions of tons.....		—	—	2	677	—
Tin plates product in millions of pounds.....		27	115	270	270	287
Copper product in thousands of tons.....		52	232	276	288	2244
Wool product in millions of pounds.....		592	1717	1489	399	522
Corn product, millions of bushels.....		400	498	399	522	637
Wheat product, millions of bushels.....	155	2333	5761	7311	9436	10727
Cotton product, thousands of bales.....		110	92	136	149	283
Cane sugar product, thousands of tons.....		239	956	1476	2219	2549
Sugar consumed, thousands of tons.....		595	1785	2325	3644	3924
Cotton for mills, thousands of bales.....		9	93	166	194	—
Railways operated, thousands of miles.....		—	—	520	584	—
Passengers carried, millions.....		—	—	79	141	—
Freight carried one mile, billions of tons.....		—	—	—	—	—

**Manufacturing**

RELATIVE CONDITIONS IN THE MANUFACTURING AND  
NON-MANUFACTURING SECTIONS OF  
THE UNITED STATES.



Manufacturing section includes area north of the Potomac and Ohio, and east of the Mississippi, viz., the New England and Middle states, and Maryland, District of Columbia, Ohio, Indiana, Illinois, Michigan and Wisconsin.

	Manufacturing section	Other states
Per cent of total population of U. S. . . . .	50.9	49.1
Per cent of total area of U. S. . . . .	14.1	85.9
Gross value of manufactures in 1900. . . . .	\$10,021,718,461	\$2,988,318,053
Per cent of total manufactures produced in section . . . . .	77	23
Salaries and wages paid in mfg. in 1900. . . . .	\$2,194,936,683	\$536,471,656
No. persons employed in mfg., 1900. . . . .	4,437,714	1,273,917
Av. value per acre of all farm lands. . . . .	\$24.07	\$12.78
Av. p acre of all farm lands and bldgs. . . . .	32.50	14.85
Average value per acre of land (improved only) and buildings. . . . .	58.60	31.65
Av. value buildings per improved acre. . . . .	15.25	5.54

	Manufacturing section	Other states
Av. value of implements owned per improved acre .....	\$2.54	\$1.47
Average value p head of milch cows.	33.62	27.46
Average value per head of horses....	60.87	43.32
Average value of all farm products per improved acre .....	141.00	101.40
Average value of farm products, per person engaged .....	619.25	394.50
Deposits in savings banks, total.....	2,200,439,338	249,108,047
Deposits in savings banks, per capita.	56.90	6.67
Deposits in all banks, total.....	5,949,984,845	1,384,666,395
Deposits in all banks, per capita.....	153.90	37.10
Bank clearings, total.....	76,356,970,422	8,225,479,659
Bank clearings, average per capita...	1,973.50	220.40
Banking resources, total .....	8,613,200,000	2,167,500,000
Banking resources, average p capita.	222.65	58.10
Real and personal property, assessed valuation .....	23,445,809,898	10,388,667,238
Real and personal property, p capita.	606.25	278.50
Salaries paid teachers in pub. schools.	85,234,961	52,452,785
Newspapers published, number.....	9,151	9,075
Newspapers, aggregate circulation ...	6,168,125,616	2,000,023,133

## PRODUCTION OF IRON AND STEEL IN THE UNITED STATES.

[Showing increase in exportations.]

	1880	1890	1900	1903
Pig iron produced, millions of tons.....	3	9	13	18
Crude steel produced, millions of tons.....	1	4	10	—
Domestic iron used, per cent.....	78	98	98	—
Price of pig iron, No. 1 foundry, dollars per ton.28	18	19	19	19
Price of steel rails, dollars per ton.....	67	31	32	28
Price of wire nails, dollars per 100-lb keg.....	—	2.51	2.76	2.13
Manufactures imported, millions of dollars.....	71	41	20	51
Manufactures exported, millions of dollars.....	14	25	121	96

## The Canning Industry

The canning of fruits, vegetables, fish and meat has become one of the great industries of the United States. There has been a tremendous growth in the trade during recent years and factories have sprung up in great numbers throughout the country. On the next page are given statistics showing the number of concerns in the various states and the kind of goods canned in each state.

AMERICAN AGRICULTURIST  
STATE CANNERIES.

State	No. of factories	Goods canned
Ala. ....	3	Oysters, lima beans, tomatoes.
Alaska .....	50	Salmon.
Ariz. ....	1	
Ark. ....	7	Tomatoes, berries, corn and potatoes.
Cal. ....	8	Fruit and vegetables.
Col. ....	9	Tomatoes, fruit and vegetables.
Ct. ....	7	Tomatoes, corn and other vegetables.
Del. ....	62	Peas, peaches and tomatoes.
Fla. ....	9	Fish, pineapples, guavas.
Ga. ....	15	Oysters, peaches, vegetables.
Ill. ....	67	Corn, tomatoes, beans, pumpkins.
Ind. ....	65	Tomatoes and vegetables.
Ia. ....	32	Corn, tomatoes.
Kan. ....	7	Tomatoes, peas, apples, pumpkins.
Ky. ....	14	Tomatoes, peas, corn, vegetables.
La. ....	5	Fruit, beans, oysters.
Me. ....	138	Sardines and shell fish, corn, berries.
Md. ....	370	Tomatoes, peas, corn, sauerkraut, oysters, fruit.
Mass. ....	18	Meats, fish, baked beans.
Mich. ....	33	
Minn. ....	6	
Miss. ....	12	Fruits, beans, figs, oysters, crabs.
Mo. ....	53	Tomatoes, corn, fruits.
Neb. ....	6	Corn, tomatoes, apples, pears.
N. C. ....	19	Tomatoes, peaches, oysters.
N. J. ....	84	Tomatoes, beans, corn, berries.
N. M. ....	2	
N. Y. ....	219	Vegetables and fruits.
Ohio ....	77	Corn, tomatoes, fruit and vegetables.
Okla. ....	1	
Ore. ....	43	Salmon, fruit and vegetables.
Pa. ....	45	Corn and tomatoes.
R. I. ....	1	
S. C. ....	9	Shell fish and vegetables.
S. D. ....	1	
Tenn. ....	18	Fruit and vegetables.
Tex. ....	12	Vegetables, shell fish.
Utah ....	16	Tomatoes.
Vt. ....	8	Maple sugar, jelly.
Va. ....	183	Tomatoes, peaches, pears, shell fish.
Wash. ....	45	Salmon, tomatoes and corn.
W. Va. ....	10	Fruits, berries, vegetables.
Wis. ....	34	Peas, tomatoes, corn.

No advertisement is allowed in the columns of the American Agriculturist weeklies unless we believe that any subscriber can safely do business with the advertiser.

**Finance****SAVINGS BANK DEPOSITS.**

The total deposits in all the savings banks of the world, according to latest official information received by the department of commerce and labor, through its bureau of statistics, amounted to over 10½ billion dollars, contributed by 82,640,000 depositors. Of this total the United States shows aggregate deposits of \$3,060,179,000, credited to 7,305,000 depositors. As the figures used in arriving at the grand totals cover about one-half of the population of the world, viz, over 770 million, it appears that the United States, with less than 9½ per cent of the total population considered, contributes over 29 per cent of the total savings deposits recorded.

**NUMBER DEPOSITORS, AMOUNT DEPOSITS, AVERAGE DEPOSIT ACCOUNTS, AND AVERAGE DEPOSIT PER INHABITANT IN POSTAL AND OTHER SAVINGS BANKS OF WORLD.**

Country	Number of depositors	Total deposits	Average deposit	Am't per inhabitant
Australia, commonwealth of...	1,086,018	\$164,161,981	\$161.15	\$43.47
Austria .....	4,046,307	876,941,933	177.29	33.47
Belgium .....	2,088,448	141,851,419	67.92	20.37
Canada .....	213,688	60,771,128	289.14	10.99
Denmark .....	1,203,120	236,170,057	196.29	96.41
France .....	11,298,474	847,224,910	75.01	21.75
Germany .....	15,432,211	2,273,406,226	147.38	39.98
*Prussia .....	9,377,503	1,485,793,500	158.44	43.10
Holland .....	1,330,275	72,738,817	54.83	13.60
Hungary .....	1,717,515	432,810,515	251.91	21.92
India, British .....	866,693	34,656,371	39.98	.15
Italy .....	6,740,138	482,263,472	71.55	14.52
Japan .....	7,467,452	40,887,186	5.48	.90
New Zealand .....	261,948	38,332,823	146.34	49.61
Norway .....	718,823	89,633,481	124.69	39.94
Roumania .....	145,507	7,426,031	51.04	1.26
Russia, including Asiatic part.	4,950,607	445,014,951	89.90	3.16
Finland .....	226,894	21,144,278	93.19	7.60
Sweden .....	1,892,586	151,480,442	80.54	29.14
Switzerland .....	1,300,000	193,000,000	148.46	62.26
United Kingdom .....	11,093,469	966,854,253	87.15	22.82
Other British colonies.....	354,275	32,936,217	92.97	2.78
<b>Total .....</b>	<b>75,334,398</b>	<b>\$7,609,706,491</b>	<b>\$101.01</b>	<b>\$11.00</b>
<b>United States .....</b>	<b>7,305,443</b>	<b>3,060,178,611</b>	<b>418.89</b>	<b>37.38</b>
<b>Grand total .....</b>	<b>82,639,841</b>	<b>\$10,669,885,102</b>		

\*Not included in the total.

**AMERICAN AGRICULTURIST**  
**FINANCIAL STANDING OF THE WORLD.**

Country	Population in round millions	Millions of dollars					Dollars per capita of		
		Exports	Imports	Revenue	Expendi- tures	Debt	Debt	Interest	Revenue
Argentina .....	4	173	99	62	60	479	100	7.00	13.00
Australasia .....	3	213	203	140	142	1084	287	11.00	37.00
Austria-Hungary ..	45	349	387	75	75	1107	24	1.12	1.67
Austria .....	26	—	—	350	350	739	28	1.31	13.40
Hungary .....	19	—	—	220	221	1038	53	2.00	11.00
Belgium .....	6	358	439	122	116	544	81	4.00	18.00
Brazil .....	4	177	113	137	99	540	37	1.00	9.00
Canada .....	5	213	224	58	50	271	49	2.00	10.00
Chile .....	3	61	48	38	44	107	35	1.00	12.00
China .....	407	134	198	62	71	613	1	.07	.15
Cuba .....	1	77	58	18	19	—	—	—	11.00
Denmark .....	2	85	116	20	20	66	26	.89	8.00
Egypt .....	9	87	73	60	56	500	51	2.00	6.00
France .....	38	820	848	95	695	5856	150	5.00	17.00
German Empire ....	58	1143	1340	495	553	698	11	.12	8.00
British India .....	294	408	255	371	346	1102	4	3.52	1.00
Italy .....	32	284	342	375	356	2560	78	.47	11.00
Japan .....	45	127	135	133	132	261	5	.67	2.00
Mexico .....	13	88	74	29	27	175	12	2.61	2.15
Netherlands .....	5	732	867	61	61	463	86	1.00	11.00
Norway .....	2	45	78	27	27	70	31	—	11.00
Peru .....	4	17	21	7	7	23	5	1.07	1.63
Russia .....	141	392	305	101	116	3414	24	4.00	7.00
Spain .....	18	154	175	197	187	2061	110	.61	10.00
Sweden .....	5	105	134	49	49	92	17	.25	9.00
Switzerland .....	3	217	168	20	20	17	5	—	6.00
United Kingdom ...	41	1379	2579	737	897	3885	92	3.63	17.00
United States .....	80	1392	1025	694	644	925	11	—	8.00

**GOLD AND SILVER COINAGE IN MINTS OF THE WORLD.**

[In round millions.]

Year	Gold		Silver	
	Fine ounces	Value	Fine ounces	Value
1902 .....	10	\$220	149	\$193
1901 .....	12	248	107	138
1900 .....	17	354	143	185
1890 .....	7	149	117	152
1880 .....	7	149	65	84
1873 .....	12	257	101	131
Total, 1873-02..	288	5,954	3,127	4,044



## Pensions

The pension system was the greatest as a burden to the people of the United States in 1893, since which time the burden has been constantly decreasing until it has shrunk in 11 years from \$2.24 to less than \$1.32 per \$1000 of taxable wealth. In 10 years more the burden will cease to be noticed.

### SUMMARY FOR FIVE YEARS.

	1904	1903	1902	1901	1900
Number cases on hand.....	285,523	304,809	339,436	403,569	437,104
Clerks .....	1,734	1,736	1,736	1,741	1,741
Applications filed .....	254,333	225,871	188,626	219,179	181,005
Admissions .....	151,211	130,109	117,268	106,990	102,596
Rejections .....	108,114	113,794	118,464	110,254	116,129
Benefit cases .....	8,725	8,203	10,441	9,836	8,000
Total number cases adjudged.....	268,050	252,106	246,173	227,080	226,755

### PENSION CLAIMS FILED AND ALLOWED.

[Issues in round thousands.]

	1862	1870	1880	1890	1893	1903	1904
Applications .....	2	24	141	105	119	52	55
Claims allowed .....	—	18	19	66	121	40	44

### PENSIONS OF THE SEVERAL WARS.

War of the Revolution (estimated).....	\$70,000,000.00
War of 1812 (service, without regard to disability)..	45,326,774.16
Indian wars (service, without regard to disability).	6,980,896.93
War with Mexico (service, without regard to disability) .....	35,162,130.35
War of the Rebellion .....	3,011,373,235.13
War with Spain .....	8,586,200.09
Regular establishment .....	2,287,924.99

Actual total disbursements in pensions.....\$3,179,717,161.65

The amounts paid as pensions on account of disabilities and deaths as results of military and naval service during the wars of 1812 and with Mexico and in time of peace to the beginning of the war with Spain are included in the payments on account of the war of the Rebellion. However, beginning with the last fiscal year, those pensioned on account of disabilities incurred in time of peace since the close of the war of the Rebellion have been classified as the "regular establishment." Hereafter this expenditure will appear as a separate item, and not charged to the war of the Rebellion as heretofore.

The number of pensioners in the United States in 1904 was 989,852; the total amount paid, \$140,257,000. There were also 4910 pensioners residing outside of the United States, drawing \$722,440. On the pension roll there were 730,315 soldiers, 273,841 widows and 606 army nurses.

Year	Total wealth of the U. S. in round billions	Cost of pen- sion system per \$1000
1904 .....	*\$110	\$1.32
1903 .....	*107	1.32
1900 .....	94	1.50
1895 .....	77	1.90
1893 .....	*72	2.24
1890 .....	65	1.40

\*Estimated.

#### AVERAGE VALUE OF PENSIONS.

	1904	1903	1902	1901	1900
Average annual value each pension...	\$134	\$133	\$132	\$131	\$132
regular establishment .....	173	—	—	—	—
under general law .....	180	176	171	168	167
under act 1890 .....	110	108	108	108	108
war with Spain.....	132	137	140	153	169

#### CLASSIFICATION OF PENSIONERS, JULY 1, 1904.

Wars	Survivors	Widows	Daughters	Army invalids	Army widows	Navy invalids	Navy widows	Army nurses
Revolutionary .....	—	1	2	—	—	—	—	—
War of 1812 .....	1	918	—	—	—	—	—	—
*Indian wars .....	—	3	—	—	—	—	—	—
*Mexican war .....	5	7	—	—	—	—	—	—
*Civil war (after March, '61).....	—	—	—	238	84	2	1	.606
*Civil war (after June, '90)....	—	—	—	433	161	16	7	—
*War with Spain .....	—	—	—	11	4	.494	.202	—
Regular establishment .....	—	—	—	7	2	1	1	—

\*Number in thousands.

Total number of pensioners, 994,762.

### Population

The increase of population in the United States from 1890 to 1900 was 21,253,303, or 34 per cent, of which 8,083,683 was due to annexation of new territory. The eastern half of the country holds 90 per cent of the total population, the Atlantic coast alone holding 40 per cent.

## ONE HUNDRED LARGEST CITIES, U. S. A.

[Census of 1900.]

New York .....	3,437,202	Wilmington, Del. ....	76,508
Chicago, Ill. ....	1,698,575	Camden, N. J. ....	75,935
Philadelphia, Pa. ....	1,293,697	Troy, N. Y. ....	75,057
St. Louis, Mo. ....	575,238	Trenton, N. J. ....	73,307
Boston, Mass. ....	560,892	Bridgeport, Ct. ....	70,996
Baltimore, Md. ....	508,957	Lynn, Mass. ....	68,513
Cleveland, O. ....	381,768	Oakland, Cal. ....	68,960
Buffalo, N. Y. ....	352,387	Lawrence, Mass. ....	62,559
San Francisco, Cal. ....	342,782	New Bedford, Mass. ....	62,442
Cincinnati, O. ....	325,902	Des Moines, Ia. ....	62,139
Pittsburg, Pa. ....	321,616	Springfield, Mass. ....	62,059
New Orleans, La. ....	287,104	Somerville, Mass. ....	61,643
Detroit, Mich. ....	285,704	Hoboken, N. J. ....	59,364
Milwaukee, Wis. ....	285,315	Evansville, Ind. ....	59,007
Washington, D. C. ....	278,718	Manchester, N. H. ....	56,987
Newark, N. J. ....	246,070	Utica, N. Y. ....	56,383
Jersey City, N. J. ....	206,433	Peoria, Ill. ....	56,100
Louisville, Ky. ....	204,731	Charleston, S. C. ....	55,807
Minneapolis, Minn. ....	202,718	Savannah, Ga. ....	54,244
Providence, R. I. ....	175,597	Salt Lake City, Utah... ..	53,531
Indianapolis, Ind. ....	169,164	San Antonio, Tex. ....	53,321
Kansas City, Mo. ....	163,752	Duluth, Minn. ....	52,969
St. Paul, Minn. ....	163,065	Erie, Pa. ....	52,733
Rochester, N. Y. ....	162,508	Elizabeth, N. J. ....	52,130
Denver, Col. ....	133,859	Wilkesbarre, Pa. ....	51,721
Toledo, O. ....	131,822	Kansas City, Kan. ....	51,418
Allegheny, Pa. ....	129,896	Harrisburg, Pa. ....	50,167
Columbus, O. ....	125,560	Portland, Me. ....	50,145
Worcester, Mass. ....	118,421	Yonkers, N. Y. ....	47,931
Syracuse, N. Y. ....	108,374	Norfolk, Va. ....	46,624
New Haven, Ct. ....	108,027	Waterbury, Ct. ....	45,859
Paterson, N. J. ....	105,171	Holyoke, Mass. ....	45,712
Fall River, Mass. ....	104,853	Ft. Wayne, Ind. ....	45,115
St. Joseph, Mo. ....	102,979	Youngstown, O. ....	44,885
Omaha, Neb. ....	102,555	Houston, Tex. ....	44,633
Los Angeles, Cal. ....	102,479	Covington, Ky. ....	42,938
Memphis, Tenn. ....	102,320	Akron, O. ....	42,728
Scranton, Pa. ....	102,026	Dallas, Tex. ....	42,638
Lowell, Mass. ....	94,969	Saginaw, Mich. ....	42,435
Albany, N. Y. ....	94,151	Lancaster, Pa. ....	41,459
Cambridge, Mass. ....	91,886	Lincoln, Neb. ....	40,169
Portland, Ore. ....	90,426	Brockton, Mass. ....	40,063
Atlanta, Ga. ....	89,872	Binghamton, N. Y. ....	39,647
Grand Rapids, Mich. ....	87,565	Augusta, Ga. ....	39,441
Dayton, O. ....	85,533	Honolulu, Hawaii ....	39,305
Richmond, Va. ....	85,050	Pawtucket, R. I. ....	39,231
Nashville, Tenn. ....	80,865	Altoona, Pa. ....	38,973
Seattle, Wash. ....	80,671	Wheeling, W. Va. ....	38,878
Hartford, Ct. ....	79,850	Mobile, Ala. ....	38,469
Reading, Pa. ....	78,961	Birmingham, Ala. ....	38,415

## OUR POPULATION BY STATES AND TERRITORIES.

States, territories	Totals by thousands			Admitted to Union
	1880	1890	1900	
Alabama .....	1,262	1,513	1,828	December 14, 1819
Arkansas .....	802	1,123	1,511	June 15, 1836
California .....	864	1,208	1,485	September 9, 1850
Colorado .....	194	412	539	August 1, 1876
Connecticut .....	622	746	908	*January 9, 1788
Delaware .....	146	168	184	*December 7, 1787
Florida .....	269	391	528	March 3, 1845
Georgia .....	1,542	1,837	2,216	*January 2, 1788
Idaho .....	32	84	161	July 3, 1890
Illinois .....	3,077	3,826	4,321	December 3, 1818
Indiana .....	1,978	2,192	2,516	December 11, 1816
Iowa .....	1,624	1,911	2,231	December 28, 1846
Kansas .....	996	1,427	1,470	January 29, 1861
Kentucky .....	1,648	1,858	2,147	June 1, 1792
Louisiana .....	939	1,118	1,381	April 30, 1812
Maine .....	648	661	694	March 15, 1820
Maryland .....	934	1,042	1,188	*April 28, 1788
Massachusetts .....	1,783	2,238	2,805	*February 6, 1788
Michigan .....	1,636	2,093	2,420	January 26, 1837
Minnesota .....	780	1,301	1,701	May 11, 1858
Mississippi .....	1,131	1,289	1,551	December 10, 1817
Missouri .....	2,168	2,079	3,106	August 10, 1821
Montana .....	39	132	243	November 8, 1889
Nebraska .....	452	1,058	1,066	March 1, 1867
Nevada .....	62	45	42	October 31, 1864
New Hampshire .....	346	378	411	*June 21, 1788
New Jersey .....	1,131	1,444	1,883	*December 18, 1787
New York .....	5,082	5,997	7,268	*July 26, 1788
North Carolina .....	1,399	1,617	1,898	*November 21, 1789
North Dakota .....	36	182	319	November 3, 1889
Ohio .....	3,198	3,672	4,157	November 29, 1802
Oregon .....	174	313	413	February 14, 1859
Pennsylvania .....	4,282	5,258	6,302	*December 12, 1787
Rhode Island .....	276	345	428	*May 29, 1790
South Carolina .....	995	1,151	1,340	*May 23, 1788
South Dakota .....	98	328	401	November 3, 1889
Tennessee .....	1,542	1,767	2,020	June 1, 1796
Texas .....	1,591	2,235	3,048	December 29, 1845
Utah .....	143	207	276	January 4, 1896
Vermont .....	332	332	343	March 4, 1791
Virginia .....	1,512	1,655	1,854	*June 25, 1788
Washington .....	75	349	518	November 11, 1889
West Virginia .....	618	762	958	June 19, 1863
Wisconsin .....	1,315	1,686	2,069	May 29, 1848
Wyoming .....	20	60	92	July 11, 1890
Alaska .....	—	30	63	
Arizona .....	40	59	122	
District of Columbia .....	177	230	278	

## OUR POPULATION BY STATES AND TERRITORIES—Continued.

Territories	Totals by thousands		
	1880	1890	1900
Indian Territory.....	—	—	392
New Mexico .....	110	153	195
Oklahoma .....	—	61	398
Totals .....	50,155	62,652	76,212

\*The 13 original states. The dates indicate when those states ratified the constitution of the United States.

## The United States Army

Commander-in-chief, Theodore Roosevelt, President.  
 Secretary of War, William H. Taft.  
 Assistant Secretary of War, Robert Shaw Olliver.

### GENERAL STAFF OF THE ARMY.

Lieutenant General, Adna R. Chaffee, Chief of Staff.  
 Major General, George L. Gillespie.  
 Brigadier General, Tasker H. Bliss.  
 Brigadier General, John P. Story.

### THE NEW ARMY LAW.

The principal change involved in the military organization by this law is the establishment of a General Staff Corps, "to be composed of officers detailed from the army at large, under such rules as may be prescribed by the President." None of these officers may be below the grade of brigadier-general, and shall be detailed for a period of four years, unless sooner relieved. The entire corps shall consist of four Colonels, six Lieutenant-Colonels, 12 Majors and 20 Captains, whose duties shall be "to prepare plans for the national defense and for the mobilization of the military forces in time of war; to investigate and report upon all questions affecting the efficiency of the army and its state of preparation for military operations; to render professional aid and assistance to the Secretary of War and to general officers and other superior commanders, and to act as their agents in informing and co-ordinating the action of all the different officers who are subject under the terms of this act to the supervision of the Chief of Staff; and to perform such other military duties not otherwise assigned by law as may be from time to time prescribed by the President."

The President's command is exercised through the Secretary of War and the Chief of Staff. The Secretary of War is charged with carrying out the policies of the President in military affairs. He directly represents the President and is bound always to act in conformity with the President's instructions.

Under the law and the decisions of the Supreme Court, his acts are the President's acts, and his directions and orders are the President's directions and orders.

The Chief of Staff is charged with the duty of supervising, under the direction of the Secretary of War, all troops of the line, the Adjutant-General's, Inspector-General's, Judge-Advocate-General's, Quartermaster's, Subsistence, Medical, Pay and Ordnance departments, the Corps of Engineers and the Signal Corps. He performs such other military duties not otherwise assigned by law as may be assigned to him by the President.

The assistant officers of the General Staff Corps will perform such duties as may be assigned them under the law by the Chief of Staff.

### STRENGTH OF THE ARMY.

At the date of the last reports received from the military departments (October 15, 1904), the actual strength of the regular army was 3744 officers and 56,439 enlisted men, distributed as follows:

Country	Officers	Enlisted men	Total
United States .....	2,892	43,570	46,462
Philippine Islands .....	779	11,538	12,317
Porto Rico .....	5	5	10
Hawaiian Islands .....	7	209	216
China .....	5	131	136
Alaska .....	56	986	1,042
<b>Total .....</b>	<b>3,744</b>	<b>56,439</b>	<b>60,183</b>

The distribution among the different branches of the service is as follows: General officers and staff organizations, 4103; cavalry, 12,846; artillery, 15,580; infantry, 25,546; recruits and miscellaneous, 2103.

### OUR ARMY.

Compared with the military powers of Europe, our standing army of 60,000 is very small. Germany has 4,000,000 on war footing; France, 3,500,000, and Russia, 4,500,000. Austria, Italy, Great Britain, Turkey and Spain even, have all possessed armies greatly outnumbering our own. The great strength of the United States, however, lies in the 10,000,000 untrained men available for military duty.

The pay of the officers in active service is as follows: Lieutenant-General, \$11,000; Major-General, \$7500; Brigadier-General,

\$5500; Colonel, \$3500; Lieutenant-Colonel, \$3000; Major, \$2500; mounted Captain, \$2000; Captain on foot, \$1800; a regimental Adjutant, \$2000; regimental Quartermaster, \$2000; First Lieutenant, mounted, \$1600; First Lieutenant, on foot, \$1500; Second Lieutenant, mounted, \$1500; Second Lieutenant, on foot, \$1400. All of the officers, from the Colonel down, receive additional amounts after five, ten, 15 and 20 years' service, but there is a limit to this amount; thus the maximum pay of a Colonel is \$4500 per annum. The pay of a private, whether artillery, cavalry or infantry, is \$17 per month for the first and second years, \$18 for the third, \$19 for the fourth year, \$20 for the fifth year. After five years' continuous service they receive \$2 per month extra.

The national guard or militia is a voluntary organization for state defense, but liable to national duty upon summons of the President of the United States. The militia in each state is divided into brigades, regiments and companies. In February, 1901, Congress enacted a law that the army of the United States, including the existing organizations, "shall consist of 15 regiments of cavalry, a corps of artillery, 30 regiments of infantry, one Lieutenant-General, six Major-Generals, 15 Brigadier-Generals, an Adjutant-General's Department, an Inspector-General's Department, a Judge-Advocate-General's Department, a Medical Department, a Pay Department, a Corps of Engineers, an Ordnance Department, a Signal Corps, the officers of the Record and Pension Office, the Chaplains, the officers and enlisted men of the army on the retired list, the professors, corps of cadets, the army detachments and band at the United States Military Academy, Indian scouts as now authorized by law, and such other officers and enlisted men as may hereinafter be provided for."

### RECRUITING STANDARD OF THE ARMY.

Applicants for first enlistment must be between the ages of 18 and 35 years, of good character and habits, free from disease, and must be able to speak, read and write the English language. No person under 18 years of age will be enlisted or re-enlisted, and minors between the ages of 18 and 21 years must not be enlisted without the written consent of father, only surviving parent, or legally appointed guardian. Original enlistments will be confined to persons who are citizens of the United States, or who have made legal declaration of their intention to become citizens thereof. Married men will be enlisted only upon the approval of a regimental commander. For infantry and heavy artillery, the height must not be less than 5 feet 4 inches, and weight not less than 120 pounds and not more than 190 pounds. For cavalry and light artillery the height must be not less than 5 feet 4 inches and not more than 5 feet 10 inches, and weight not to exceed 165 pounds.

It is not necessary that the applicant should conform exactly to the figures indicated in the standard table of proportions. A

variation not exceeding ten pounds in weight or 2 inches in chest measurement (at expiration) below the standard given in the table is admissible when the applicant is active and has firm muscles. The term of service is three years.

### THE MILITIA ACT.

Of equal importance with the general staff in its relation to the general military efficiency of the country is the act to promote the efficiency of the militia, approved January 21, 1903, supplemented by an appropriation of \$2,000,000 in the army appropriation act of March 2, 1903. The act proceeds mainly upon the ideas that whenever the United States becomes involved in war, the regular army will form but a small part of its armed force, and the country must rely, for immediate and special exigencies, upon militia, and for service going beyond the proper limits of militia upon volunteers.

The total strength of the organized militia by states is as follows:

### MILITIA FORCE OF THE UNITED STATES.

State	Total com.-officers	Non-com. officers and privates	Total	State	Total com.-officers	Non-com. officers and privates	Total
Me. ....	108	1,156	1,264	Ill. ....	470	6,524	6,994
N. H. ....	110	1,232	1,342	Mo. ....	193	2,484	2,677
Vt. ....	60	716	776	Wis. ....	195	2,578	2,773
Mass. ....	382	4,737	5,119	Minn. ....	183	1,789	1,922
R. I. ....	155	1,258	1,413	Ia. ....	218	2,412	2,630
Ct. ....	194	2,425	2,619	Neb. ....	111	1,484	1,595
N. Y. ....	859	13,551	14,410	Kan. ....	115	1,196	1,311
N. J. ....	273	3,765	4,038	Nev. ....	11	127	138
Pa. ....	700	8,643	9,343	Ore. ....	104	1,176	1,280
Del. ....	42	326	368	Cal. ....	299	3,173	3,472
Md. ....	139	1,915	2,054	Col. ....	78	1,005	1,083
Va. ....	146	2,185	2,331	N. D. ....	71	647	718
W. Va. ....	112	883	995	S. D. ....	95	854	949
N. C. ....	176	1,684	1,860	Mont. ....	24	316	340
S. C. ....	352	2,677	3,029	Wash. ....	71	887	958
Ga. ....	338	4,429	4,767	Ida. ....	31	637	668
Fla. ....	104	1,348	1,452	Wyo. ....	26	297	323
Ala. ....	220	2,381	2,581	Utah ....	43	483	526
Miss. ....	153	1,220	1,373	Territories			
La. ....	128	1,390	1,518	Ariz. ....	42	341	383
Tex. ....	251	2,829	3,080	N. M. ....	50	562	612
Ark. ....	126	1,516	1,642	Okla. ....	60	566	626
Ky. ....	119	1,658	1,777	Hawaii ....	46	495	541
Tenn. ....	91	1,213	1,304	Dist. of Col..	130	1,130	1,260
Ohio ....	416	5,585	6,001				
Ind. ....	186	2,222	2,408				
Mich. ....	195	2,911	3,106				
				Aggregate.	8,751	106,998	115,749



**UNITED STATES FORTS, BARRACKS AND CAMPS, ARSE-  
NALS AND HOSPITALS.**

Forts, barracks Arse- Hospitals and camps nals			Forts, barracks Arse- Hospitals and camps nals		
Me. ....	5	—	Ill. ....	1	1
N. H. ....	1	—	Mich. ....	2	—
Vt. ....	1	—	Minn. ....	1	—
Mass. ....	8	2	Ia. ....	1	—
R. I. ....	4	—	Neb. ....	3	—
Ct. ....	2	—	Kan. ....	2	—
N. Y. ....	13	2	Okla. ....	2	—
N. J. ....	2	—	Col. ....	1	—
Pa. ....	—	2	Wyo. ....	4	—
Del. ....	2	—	Mont. ....	4	—
Md. ....	6	—	N. D. ....	1	—
Va. ....	4	—	S. D. ....	1	—
N. C. ....	1	—	Ida. ....	1	—
S. C. ....	4	—	Utah ....	2	—
Ga. ....	3	—	N. M. ....	1	—
Fla. ....	6	—	Ariz. ....	4	—
Ala. ....	2	—	Cal. ....	11	2
La. ....	2	—	Ore. ....	1	—
Tex. ....	7	1	Wash. ....	10	—
Ark. ....	1	—	Alaska ....	6	—
Mo. ....	1	—	Hawaii ....	1	—
Tenn. ....	—	1	Porto Rico. 2	—	—
Ky. ....	1	—	Wash., D.C. 1	—	—
O. ....	1	—			

**TROOPS ENGAGED IN WARS OF UNITED STATES.**

Wars	Years	Total troops
Revolution .....	1775-83	309,781
Northwest Indians .....	1790-95	8,983
With France .....	1798-1800	*4,593
With Tripoli .....	1801-05	*3,330
Creek Indians .....	1813-14	13,781
War of 1812 .....	1812-15	556,622
Seminole Indians .....	1817-18	7,911
Black Hawk Indians .....	1831-32	6,465
Creek Indians .....	1836-37	13,418
Cherokee troubles .....	1836-37	9,494
Florida Indians .....	1835-43	41,122
Aroostook troubles .....	1838-39	1,500
Mexican .....	1846-48	112,230
Apache, etc. ....	1849-55	2,561
Seminole Indians .....	1856-58	3,687
Civil war .....	1861-65	2,778,304
With Spain .....	1898	225,000

\*Naval forces.

## UNITED STATES SOLDIERS IN THE CIVIL WAR.

State	Aggregate	State	Aggregate
New York .....	455,568	New Hampshire .....	34,605
Pennsylvania .....	366,326	West Virginia .....	30,003
Ohio .....	317,133	Minnesota .....	25,034
Illinois .....	258,217	Rhode Island .....	23,711
Indiana .....	195,147	Kansas .....	20,097
Massachusetts .....	151,785	District of Columbia....	16,872
Missouri .....	107,773	Delaware .....	13,651
Wisconsin .....	96,118		
Michigan .....	90,119	Total .....	2,653,062
New Jersey .....	79,511	The total number called for,	
Kentucky .....	78,540	under all calls made by the	
Iowa .....	75,860	President, from April 15, 1861,	
Maine .....	71,745	to April 14, 1865, was 2,759,049.	
Connecticut .....	52,270	Their terms of service under	
Maryland .....	49,730	the calls were from three	
Vermont .....	35,256	months to three years.	

## ADMISSION TO WEST POINT ACADEMY.

One cadet may be nominated from each congressional district and from each territory by the representative of his district or territory; two cadets at large are appointed from each state by the state senators, and 40 cadets are appointed by the President from the country at large and the District of Columbia. The representative may nominate two legally qualified second candidates, to be designated alternates. The alternates will receive from the war department a letter of appointment, and will be examined with regular appointee, and if duly qualified, the first will be admitted to the academy in event of failure of principal to pass prescribed examinations, and the second in event of failure of the first alternate. Appointees must be between 17 and 22 years, free from any infirmity which may render them unfit for military service, and able to pass a careful examination in reading, writing, orthography, arithmetic, grammar, geography and history of the United States. Many applicants are rejected because of physical defects. Candidates must be residents of the district from which appointment is made.

The academy was founded in 1802. It is located near the Hudson river at West Point, N. Y. A thorough course of four years is given. Academic duties begin September 1 and continue until June 1. Examinations are held in each January and June, and cadets found proficient in studies and correct in conduct are given the particular standing in their class to which their merits entitle them, while those pupils deficient in either conduct or studies are discharged. Cadets are allowed but one leave of absence during the four years' course, and this is granted at the expiration of the first two years.

Cadets are paid \$500 per year, and allowed one ration per day, or an equivalent of 30 cents per day, making the entire

allowance \$609.50 per year. Graduates must remain at least four years longer in government service, unless sooner discharged. They are appointed to duty in the military department for which they seem best adapted. Young men who wish to try for admission to West Point should apply to the congressman from their district.

## The Navy

### NAVY OFFICERS OF THE UNITED STATES.

#### ACTIVE LIST.

	Salaries
Admiral, George Dewey of Vermont.....	\$13,500
24 Rear Admirals, G. C. Remey, J. C. Watson, Slias Casey, F. J. Higginson, F. Rodgers, Louis Kempff, G. W. Sumner, A. S. Barker, C. S. Cotton.....	7,500
R. D. Evans, S. W. Terry, Merrill Miller, J. J. Read, H. C. Taylor, M. L. Johnson, F. Wildes, Henry Glass, C. E. Clark, P. H. Cooper, A. S. Crowninshield, J. B. Coghlan, J. H. Sands, Yates Stirling, W. C. Wise.....	5,500
75 Captains .....	3,500
118 Commanders .....	3,000
177 Lieutenant Commanders .....	2,500
306 Lieutenants .....	1,800
73 Lieutenants (Junior Grade).....	1,500
138 Ensigns .....	1,400
125 Midshipmen .....	500 to 950
24 Chaplains .....	1900 to 2500

#### MARINE CORPS.

Major-General commandant. Charles Heywood	Colonels .....	7
Adjutant and Inspector's De- partment .....	Lieutenant-Colonels .....	6
Quartermaster's department 15	Majors .....	15
Paymaster's department .... 4	Captains .....	72
	First Lieutenants .....	75
	Second Lieutenants .....	19

#### ADMISSION TO NAVAL ACADEMY.

Each member or delegate of the national house of representatives may nominate a naval cadet to the academy at Annapolis, Md.; and one is appointed for the District of Columbia and ten at large by the President. Candidates must reside in the district for which they are nominated. Candidates for cadet engineers are chosen by the secretary of the navy with-

out regard to number or residence, and from these candidates 25 are selected on competitive examination.

Applicants for admission to the academy must be between 15 and 20 years of age, physically sound, well formed and of robust constitution. Cadets are given a six-year course of study, two of which are given at sea, and must serve two years after graduation, unless discharged.

### INCREASE IN NAVY.

The amount given below, \$23,826,860, is the estimated amount required to be appropriated for work on new vessels authorized by Congress for "increase of the navy, construction and machinery," for the fiscal year ending June 30, 1905.

<b>Amount required under bureau of construction and repair:</b>	
For fiscal year 1903-4.....	\$19,815,340
For fiscal year 1904-5.....	16,408,404
	<u>\$36,223,744</u>
<b>Under bureau of steam engineering:</b>	
For fiscal year 1903-4.....	\$9,375,922
For fiscal year 1904-5.....	8,242,800
	<u>17,618,722</u>
<b>Aggregate .....</b>	<b>\$53,842,466</b>
<b>Balance in treasury available for above July 1, 1903 (less the sum of \$260,000 for one gunboat to take the place of the Michigan on the Great Lakes, authorized by act approved May 4, 1898, said vessel to be built as soon as permitted under treaty).....</b>	
	<u>30,015,606</u>
<b>Appropriation required for fiscal year 1904-5.....</b>	<b>\$23,826,860</b>

### HOW VESSELS COMMUNICATE.

The code of signals used by vessels at sea is prepared by a committee appointed at the International Marine Conferences that are held every few years. Each ship has a set of flags and a supply of rockets which represent 200 or 300 combinations. These can be interpreted by the code book into sentences covering almost every conceivable situation. Ships that pass in the night make signals by fire; in the day, by flags. The wonderful wireless telegraph system, now rapidly coming into use, will speedily work great changes in methods of communication between vessels at sea.

UNITED STATES NAVY.

1ST CLASS BATTLESHIPS.

Building or Authorized.

Name	Tons	Sp'd	Guns
Alabama	11,565	17	48
Connecticut	16,000	18	74
Georgia	14,948	19	66
Idaho	13,000	17	52
Illinois	11,565	17.4	46
Indiana	10,288	15.5	45
Iowa	11,340	17	48
Kansas	16,000	18	74
Kearsarge	11,540	16.8	56
Kentucky	11,540	16.8	60
Louisiana	16,000	18	74
Maine	12,800	18	44
Massachusetts	10,288	16.2	48
Minnesota	16,000	18	74
Mississippi	13,000	17	52
Missouri	12,230	18	44
Nebraska	14,932	19	66
New Jersey	14,948	19	66
Ohio	12,508	19	44
Oregon	10,242	18	46
Rhode Island	14,932	16.7	66
Vermont	16,000	18	74
Virginia	14,948	19	66
Wisconsin	11,564	17.1	46

2D CLASS BATTLESHIP.

Name	Tons	Sp'd	Guns
Texas	6,315	17.8	30

ARMORED CRUISERS.

Name	Tons	Sp'd	Guns
Brooklyn	9,215	21.9	43
California	13,680	22	66
Colorado	13,680	22	66
Maryland	13,680	22	66
New York	8,200	21	32
Pennsylvania	13,680	22	66
South Dakota	13,680	22	66
Tennessee	14,500	22	68

ARMORED CRUISERS—Con.

Name	Tons	Sp'd	Guns
Washington	14,500	22	68
West Virginia	13,680	22	66

PROTECTED CRUISERS.

Name	Tons	Sp'd	Guns
Albany	3,769	20.5	30
Atlanta	3,000	15.6	21
Baltimore	4,413	20	33
Boston	3,035	15.6	21
Charleston	9,700	22	68
Chattanooga	3,200	16.5	25
Chicago	5,000	18	32
Cincinnati	3,213	19	24
Cleveland	3,200	16.5	25
Columbia	7,375	22.8	28
Denver	3,200	16.5	25
Des Moines	3,200	16.5	25
Galveston	3,200	16.5	25
Milwaukee	9,700	22	68
Minneapolis	7,375	23	28
Newark	4,098	19	32
New Orleans	3,769	20	30
Olympia	5,870	21.6	36
Philadelphia	4,410	19.6	30
Raleigh	3,213	19	25
San Francisco	4,863	19.5	28
St. Louis	9,700	22	68
Tacoma	3,200	16.5	24

UNPROTECTED CRUISERS.

Name	Tons	Sp'd	Guns
Detroit	2,089	18.7	21
Marblehead	2,089	18.4	21
Montgomery	2,089	19	20

HARBOR-DEFENSE MONITORS.

Name	Tons	Sp'd	Guns
Arkansas	3,200	11.5	17
Florida	3,200	11.5	17
Nevada	3,200	11.5	17
Wyoming	3,200	11.5	17

SINGLE TURRET MONI-  
TORS.

Name	Tons	Sp'd	Guns
Canonicus .....	2,100	6	4
Jason .....	1,875	5-6	4
Lehigh .....	1,875	5-6	4
Montauk .....	1,875	5-6	4
Nahant .....	1,875	5-6	4

DOUBLE TURRET MONI-  
TORS.

Name	Tons	Sp'd	Guns
Amphitrite .....	3,960	10.5	16
Miantonomah ..	3,990	10.5	13
Monadnock .....	4,005	12	14
Monterey .....	4,084	13.6	16
Puritan .....	6,060	12.4	30
Terror .....	3,990	10.5	16

## STEEL GUNBOATS.

Name	Tons	Sp'd	Guns
Bancroft .....	839	14.3	14
Bennington .....	1,710	17.5	16
Castine .....	1,177	16	15
Concord .....	1,710	16.8	14
Don Juan de Austria .....	1,130	14	12
General Alava..	1,390	10.5	5
Isla de Cuba...	1,125	14	12
Isla de Luzon...	1,125	14	12
Machias .....	1,177	15.4	16
Petrel .....	892	11.7	10
Topeka .....	2,300	16	15
Yorktown .....	1,710	16.1	16
Gunboat No. 16.	—	—	—

## LIGHT DRAFT GUNBOATS.

Name	Tons	Sp'd	Guns
Helena .....	1,397	15.5	19
Nashville .....	1,371	16.3	16
Wilmington ...	1,397	15.0	20

## COMPOSITE GUNBOATS.

Name	Tons	Sp'd	Guns
Annapolis .....	1,060	13.1	13
Dubuque .....	1,050	12.5	14
Marietta .....	1,000	13	13

## COMP. GUNBOATS—Con.

Name	Tons	Sp'd	Guns
Newport .....	1,000	12.2	13
Paducah .....	1,050	12.5	14
Princeton .....	1,100	12	13
Vicksburg .....	1,000	12.7	13
Wheeling .....	1,000	12.8	13

## SPECIAL CLASS.

Name	Tons	Sp'd	Guns
Dolphin, steel dispatch boat.	1,486	15.5	11
Vesuvius, steel dynamite gun- boat .....	929	21.4	8

## TORPEDO BOATS.

Name	Tons	Speed
Bagley .....	175	29.1
Bailey .....	280	30.1
Barney .....	175	29
Biddle .....	175	23.5
Blakely .....	196	26
Cushing .....	105	22.5
Davis .....	154	23.4
Dahlgren .....	146.4	30.5
De Long .....	196	25.5
Du Pont .....	165	28.5
Ericsson .....	120	24
Farragut .....	279	30.1
Fox .....	154	23.1
Foote .....	142	24.5
Goldsborough ..	255	30
Gwin .....	45.7	20.8
Mackenzie .....	65	20.1
Manley .....	—	—
McKee .....	65	19.8
Morris .....	104.7	24
Nicholson .....	178	26
O'Brien .....	178	26
Porter .....	165	28.6
Rodgers .....	142	24.1
Rowan .....	210	27
Shubrick .....	200	26
Somers .....	150	17.5
Stockton .....	200	26
Stringham .....	340	30
T. A. M. Craven...	146.4	30.5
Talbot .....	46.5	21.1

**TORPEDO BOATS—Con.**

Name	Tons	Speed
Tingey .....	165	26
Thornton .....	200	27.5
Wilkes .....	165	25.9
Winslow .....	142	24.8

Guns—Each boat has two or three torpedo tubes and three or four guns.

**TRAINING SHIP—NAVAL ACADEMY—SHEATHED.**

Name	Tons	Sp'd	Guns
Chesapeake .....	1,175	—	14

**ARMORED RAM.**

Name	Tons	Sp'd	Guns
Katahdin .....	2,155	16.1	4

**TORPEDO BOAT DESTROYERS.**

Name	Tons	Speed
Bainbridge .....	420	29
Barry .....	420	29
Chauncey .....	420	29
Dale .....	420	28
Decatur .....	420	28.1
Hopkins .....	408	29
Hull .....	408	29
Lawrence .....	402	30
Macdonough .....	402	30
Paul Jones .....	480	28.9
Perry .....	480	28.3
Preble .....	480	28
Stewart .....	420	29
Truxtun .....	433	29.5
Whipple .....	433	28.5
Worden .....	433	30

Guns—Two torpedo tubes and seven guns each.

**SUBMARINE BOATS.**

Name	Tons	Speed
Adder .....	122.5	8
Grampus .....	120	8

**SUBMARINE BOATS—Con.**

Name	Tons	Speed
Holland .....	74	8
Moccasin .....	122.5	8
Pike .....	120	8
Plunger .....	122.5	8
Porpoise .....	122.5	8
Shark .....	122.5	8

Guns—One torpedo expulsion tube and three torpedoes each.

**OTHER BOATS IN UNITED STATES NAVY.**

Class	No.
Iron and wooden ste m ves-	
sels .....	11
Wooden sailing .....	7
Steel, iron, wooden steam	
tugs .....	41
Auxiliary cruisers .....	5
Converted yachts .....	23
Collers .....	16
Hospital and supply ships...	11

**VESSELS UNDER CONSTRUCTION OR AUTHORIZED.**

Class	No.
First-class battleships .....	14
Armored cruisers .....	8
Protected cruisers .....	9
Gunboat for Great lakes (not	
begun) .....	1
Composite gunboats .....	2
Steel torpedo boats .....	6
Training ships .....	2
Training brig .....	1
Tugs .....	2

**VESSELS UNFIT FOR SEA SERVICE.**

Class	No.
Iron single-turret monitors..	5
Wooden cruising vessels,	
steam .....	10
Wooden sailing vessels.....	8

## HISTORIC VESSELS OF THE UNITED STATES NAVY.

**Le Bon Homme Richard**, the ship with which the intrepid John Paul Jones won his fight with the larger and stronger British ship, the *Serapis*, in 1779.

**Alliance**, Commodore Jones's ship in cruise of British waters, 1779; and capture of British ships. *Atalanta* and *Trekassey*, 1781.

**Dolphin**, defeated two British ships, 1812; and a British squadron, 1813.

**Enterprise**, successful in battle of Lake Champlain, 1776; in French war, 1800; at Tripoli, 1801; and war with England, 1813.

**Constellation**, defeated the French warships, *Insurgente*, 1799, and *Vengeance*, 1800.

**Intrepid**, recaptured the *Philadelphia* at Tripoli, 1804.

**Constitution**, never lost a battle; principal victories against the British *Guerriere* and *Java* in 1812, and the British *Cyane* and *Levant*, in 1815.

**Wasp**, defeated the British *Frolic*, 1812; *Reindeer*, 1814; and *Avon*, 1814.

**Essex**, defeated British ship *Alert* in 1812, and was captured by *Phoebe* and *Cherub* in 1814.

**Hornet**, defeated British ships *Peacock* in 1813, and *Penguin* in 1815.

**Chesapeake**, commanded by Capt. Lawrence, captured by the British *Shannon*, 1813, one of the defeats, like that at *Bunker Hill*, as glorious as a victory.

Lawrence, Perry's flagship, victory of Lake Erie, 1813.

**Saratoga**, McDonough's flagship, victory on Lake Champlain, 1814.

**Mississippi**, flagship, expedition to Japan, one of the "victories of peace," 1853.

**Hartford**, Farragut's flagship, passage of Forts Jackson and St. Philip, 1862; of Vicksburg batteries, 1862; battle of Port Hudson, 1863; Mobile Bay 1864; and in Formosa expedition, 1867.

**Kearsarge**, defeated the Confederate *Alabama*, 1864.

**Monitor**, first of the kind, built by John Ericsson, attacked and drove away the Confederate *Merrimac*, after it had destroyed the *Cumberland* and *Congress* at Hampton Roads, in 1862.

**Olympia**, flagship of Admiral Dewey's squadron, battle of Manila Bay, May 1, 1898.

**New York**, Sampson's flagship, blockade of Santiago.

**Oregon**, record voyage from San Francisco to Florida March 19-May 24, 1898; blockade of Santiago, destruction of Spanish fleet, July 3, 1898.

**Texas**, blockade of Santiago and fight, 1898.

**Brooklyn**, blockade of Santiago and battle, 1898.

**Iowa**, blockade of Santiago and battle, 1898.

**Indiana**, blockade of Santiago and battle, 1898.



*American Insular Affairs*

## CUBA.

The Republic of Cuba, established July 3, 1902, is now enjoying its third year as such, under the administration of President Tomaso Estrada Palma. Under the constitution, the legislative power is exercised by two elective bodies—the house of representatives and the senate, conjointly called congress. The senate is composed of four senators from each of the six provinces, elected for eight years by the provincial councilmen, and by a double number of electors, constituting together an electoral board. The house of representatives is composed of one representative for each 25,000 inhabitants or fraction thereof over 12,500, elected for four years by direct vote. One-half the members of the house are to be elected every two years. The house now consists of 63 members. The six provinces into which Cuba is divided are looked after by governors.

Reports at the end of the first year showed that a good financial condition existed in the island, the surplus in the treasury then being \$3,522,681. During the year 1903 the exports amounted to \$67,097,676 and the imports \$78,486,409, making a total of \$145,564,085 for the foreign commerce. The trade of Cuba with the United States during the fiscal years (ended June 30) from 1899 to 1903 was:

Year	Value of imports from U. S.	Value of exports to U. S.
1903 .....	\$20,140,132	\$62,942,790
1902 .....	25,012,109	34,694,684
1901 .....	24,100,453	43,423,088
1900 .....	25,236,808	31,371,704
1899 .....	17,247,952	25,408,828

Since the reciprocity treaty has been in operation between the United States and Cuba (practically since January 1, 1904), the trade and commerce between the two countries has greatly increased. According to statistics compiled by the department of commerce and labor, the United States' exports to Cuba during the first three months of 1904 amounted in value to \$6,495,149, against \$3,211,063 during the first three months in 1903, an increase of nearly 25 per cent. The percentage of increase of imports from Cuba into the United States is still greater, amounting to nearly 100 per cent. The principal articles of export are sugar, tobacco and cigars, iron and manganese ore, fruit, coffee, cocoa, molasses and sponges; of import, animals, breadstuffs, coal and coke, iron and steel, wood, liquor, cotton, chemicals and vegetables.

The following is the amount of sugar produced since 1899: 1899 335,000 tons, 1900 234,000, 1901 875,000, 1902 826,646, 1903 975,000.

The total area of Cuba is 44,000 square miles, and about 10

per cent of the cultivated area of the island is given over to the raising of tobacco; in its cultivation and in the manufacture of cigars, etc., nearly 100,000 people are employed. In 1902 there were 15,444 tons of leaf tobacco exported, besides 208,165,000 cigars and 11,509,000 packages of cigarets.

The population of Cuba at the last census was 1,572,945. In 1899 there was only about 10 per cent of these who had a good, thorough education. About 2 per cent could read but not write, 33 per cent could write and 64 per cent could neither read nor write. During the short regime of the United States, the whole school system was reorganized, and in 1900 there were 180,000 children enrolled in 3099 schools.

**COMMERCE OF THE UNITED STATES WITH PORTO RICO  
AND THE HAWAIIAN AND PHILIPPINE  
ISLANDS FROM 1897 TO 1903.**

Year ended June 30—	Commerce with Porto Rico		Commerce with the Hawaiian Islands		Commerce with the Philippine Islands	
	Imports into U. S. from Porto Rico	Exports from U. S. to Porto Rico	Imports into U. S. from Hawaii	Exports from U. S. to Hawaii	Imports into U. S. from Philippine Islands	Exports from U. S. to Philippine Islands
1903 .....	\$11,057,195	\$12,246,225	\$26,242,869	\$10,840,472	\$11,872,584	\$4,039,909
1902 .....	8,378,766	10,882,653	24,730,060	—	6,612,700	5,251,867
1901 .....	5,883,892	6,861,917	27,903,058	—	4,420,912	4,027,064
1900 .....	3,078,648	4,640,449	20,707,903	13,509,148	5,971,208	2,640,449
1899 .....	3,179,827	2,685,848	17,831,463	9,305,470	4,409,774	404,193
1898 .....	2,414,356	1,505,946	17,187,380	5,907,155	3,830,415	127,804
1897 .....	2,181,024	1,988,888	13,687,799	4,690,075	4,383,740	94,597

**THE GOVERNMENT OF PORTO RICO.**

The island of Porto Rico was ceded to the United States by Spain at the treaty of Paris, April 11, 1899. For a time a military government was maintained until a civil government was effected by an act of Congress, April 12, 1900, known as the Foraker act. In accordance with this act, the island was obliged to pay duties on all imports until a system of local taxation could be put in operation which would meet the expenses of the government, when the Legislative Assembly was to notify the President. It also paid 20 per cent of the regular rates of duty upon Porto Rican articles imported into the United States. On July 25, 1901, the President issued a proclamation, since which date free trade has existed between Porto Rico and the United States.

The chief executive of the island has the official title of "The Governor of Porto Rico," and is appointed by the President of the United States, by and with the advice and consent of the Senate; his term is for four years and until his successor is chosen and qualified, unless sooner removed by the President. The powers of the governor are similar to those of the governors

of the territories of the United States. He may veto any legislation enacted, but is responsible to the President for his conduct of public affairs. He is also commander in chief of the militia of the island. An annual report to the President of the condition of affairs in Porto Rico is required of the governor.

The President also appoints, by and with the consent of the Senate, a secretary, an attorney-general, a treasurer, an auditor, a commissioner of interior and a commissioner of education; these with five other persons of good repute, likewise appointed by the President, comprise the executive council.

All legislative powers are vested in the Legislative Assembly, which consists of two houses—the executive council, just mentioned, and the house of delegates. The latter consists of 35 members elected biennially by the qualified voters. For the purposes of such elections Porto Rico has been divided by the executive council into seven districts, as nearly equal as possible in population, and each district is entitled to five members in the house of delegates. The Legislative Assembly enacts laws known as revised statutes. These laws apply to the particular needs of the people and are subject to the approval of Congress.

The present governor of Porto Rico is William H. Hunt, who resides at San Juan, the capital.

#### EDUCATION IN PORTO RICO.

Spain has done little toward educating the people, and buildings, system and teachers have all had to be provided since the island came into the possession of the United States. As fast as possible, the native teachers are being taught English, and each summer a party of them is brought to Boston for study and to learn our ways and language. There are now (report of 1901-02) in the island 322,393 children of school age, not quite one-fifth of whom are on the school rolls. There were in June, 1902, 921 schools open, 47 being night and special schools. The average number of teachers employed each month was 911, 96 American. The Porto Ricans show an enthusiasm for learning, especially among the teachers, which is most encouraging.

#### THE PHILIPPINES.

Civil Governor, Luke E. Wright, salary \$15,000.

Vice Civil Governor and Secretary of Finance and Justice, Henry C. Ide, salary \$10,500.

Secretary of Interior, Dean C. Worcester, salary \$10,500.

Secretary of Public Instruction, Gen. James F. Smith.

Attorney-General, L. R. Wilfley.

Director of Posts, C. M. Cotterman.

The government of the Philippine archipelago is in the hands of the governor, who acts with the advice and consent of the Philippine commission, appointed by the President of the United States. The governor is also president of this commission, of which the following are members: Dean C. Worcester, Henry

C. Ide, Gen. James F. Smith, Trinidad H. Pardo de Tavera, Benito Legarda and Jose Luzuriaga.

There are four executive departments—interior, finance and justice, commerce and police and public instruction. The legislature is biennial and one branch is elected by the Filipino people. The islands are divided into 39 provinces, each with a governor, secretary and treasurer, elected by the people through the municipal councilors of each town, the latter being elected by direct vote.

Among the great mass of the people there is now no disorder and no disposition to violence, but the island of Samar has a population on the mountains, many of whom are given to raiding the towns along the coast. Ladronism is now less prevalent on all the islands, as it has been vigorously pursued and punished by the scouts and constables. There are about 12,000 American troops on the islands.

Although agriculture is the chief line of industry, the methods of production on the islands are crude and labor is rather unreliable, so that the progress toward up-to-date farming has been slow. The chief products are sugar, tobacco, copra, rice, hemp, corn, coconuts and cocoa. There are also many mines in the Philippines, such as gold, lead, coal, copper, iron ore, sulphur, marble and silver, but the mining fields have never been properly prospected. During the fiscal year ended June 30, 1904, exports from the islands were \$30,226,127, imports \$33,221,250. Exports fell off as compared with 1903, because of a decrease in copra and sugar crops, due to small amount of rainfall in certain sections and to plague of locusts. Of exportations, \$21,794,960 was hemp; of importations, \$11,548,814 was rice, the principal food of the people.

The population is 7,635,426; of these, 6,987,636 are civilized and 647,740 wild. Manila has 219,028 inhabitants. The wants of the average native are but few, as his diet consists mostly of rice and fish, with but little meat, and his clothing is scant. The wild inhabitants are as primitive as any to be found upon the globe. The total area of the Philippine Islands, which are variously estimated from 1200 to 1800 in number, is 119,542 square miles.

### EDUCATION IN THE PHILIPPINES.

English is made the language of the schools. There are numerous native dialects and in only two is there the least attempt at literature; therefore a knowledge of reading in any of them would lead to nothing broad in education. The Filipino teachers are regularly instructed in English, and many can now teach and make their reports in that language. There are in the archipelago 17 school divisions, 3400 Filipino teachers, 847 American teachers and superintendents, over 200,000 children on rolls of day schools, and 25,000 pupils on rolls of night schools.

Agriculture and trades are taught in many of the schools, especially in the country districts. American teachers have shown much devotion and heroism, most of them acting as nurses during a visitation of cholera, four dying of the disease.

## PHILIPPINE CLASSIFIED SERVICE.

The employees in the insular service of the Philippine Islands are not embraced in the classified service of the United States, but are appointed in conformity with civil service rules promulgated by the civil governor of the islands, under authority vested in him by an act passed by the United States Philippine commission on September 19, 1900. This act provides for a civil service board of three persons, and in other respects is similar to the United States civil service act. The United States civil service commission assists the Philippine civil service board by conducting examinations for the Philippine service in all states and territories of the United States, and extends its aid to the Philippine board in all practical ways.

Provision is made in the United States civil service rules for the transfer to the federal classified service of employees who have served for three years in the Philippine classified service.

## HAWAII.

The eight islands comprising this territory were discovered by Capt. Cook in 1778. They were annexed to the United States in 1898, organized as a territory in April, 1900, and the new government was inaugurated in June, 1900. The governor is Sanford B. Dole. The population is over 150,000—30,000 native Hawaiians and the rest Portuguese, Japanese, Chinese, Scandinavians, Spanish, British, German and Americans. The school children of the first four-mentioned nationalities number 16,229; of others, 1505, and the former have increased more rapidly. In the year ending June 30, 1903, out of 9967 arrests, 7480 were of Hawaiians, Japanese and Chinese, the offenses being chiefly gambling, illicit selling of liquor and drunkenness.

Exports for the year ending June 30, 1903, exceeded in value those of the preceding year by \$1,481,703, sugar and coffee leading.

The total exports in 1902 were \$24,793,735; in 1903, \$26,275,438; total imports in 1903 were \$15,817,039.

Agriculture is a profitable business, and is largely carried on, the products grown ranging from rubber, bread fruit and similar tropical plants to oats, barley and onions. Sugar cane, coffee, rice and tropical fruits are at present most profitable. There are two companies of fertilizer manufacturers, which sell some 35,000 tons a year, the material entering into the fertilizer being mostly imported. A farmers' institute was organized in 1902, and is doing good work.

There are four steam railways, for freight and passengers, and one electric for passengers. Two more are incorporated, but not begun. There are 144 public and 59 private schools, with a total teaching force of 450, and 18,415 pupils, of whom 16,218 are between six and 15, the age at which attendance is compulsory. About 1000 below six attend kindergartens, and rather more above 15 are at high schools, colleges, etc. Besides these regular schools, there are two industrial reform schools, and sewing, carving, agriculture bamboo work, weaving, drawing and

singing are taught in the public schools. Leprosy is the curse of the natives, and a few of other nationalities contract the disease. All lepers are confined to the leper settlement on the island of Kalawao, but the number of patients on June 30, 1903, was somewhat less than a year before.

#### CIVIL SERVICE IN PORTO RICO AND HAWAII.

The federal positions in Porto Rico and Hawaii are embraced in the scope of the United States civil service act, and are filled in the same ways as federal positions in the United States. The civil service system has not yet been extended to the insular and municipal positions of the islands.

#### GUAM.

This is an interesting little island of 150 square miles and 9000 people. It was ceded to the United States by Spain and is the largest of the Ladrone archipelago. It is in direct line from San Francisco to the Philippines, 900 miles from Manila, and 5200 from San Francisco. The important industry is the production of copra.

#### THE SAMOAN ISLANDS.

The importance of these islands is their position as a coaling station, lying as they do in a direct line between San Francisco and Australia, about 2000 miles south and 300 miles west of the Hawaiian islands. The group consists of ten inhabited and two uninhabited islands, the total area being about 1700 square miles and the population 36,000 people. The United States has taken possession of the island of Tutuila and erected a coaling station at its chief harbor, Pago Pago. The islands are fertile, producing cocoanuts, cotton, sugar and coffee, the most important being cocoanuts, from which the "copra" of commerce is obtained, and which is exported to Europe and the United States, being used in the manufacture of coconut oil. The entire exports amount to about \$250,000 a year, one-fifth of which comes to the United States.

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In New Haven, Ct., in 1647, a young man was sent to the whipping post on Monday for not going to church on Sunday. Two brothers were beaten by their father for visiting young women on Saturday after sunset, and lived unmarried to their deaths from mortification!

In Central Africa, a traveler reports a tribe of crane-like natives, who dwell on marshes, feed on frogs and fish, and stand for hours on one leg.

## *The Dominion of Canada*

Seat of Government—Ottawa.

Governor General—The Right Hon. Earl Grey, G. C. M. G. (\$48,667).

### EXECUTIVE COMMITTEE OF THE PRIVY COUNCIL.

President of the Privy Council (first minister)—Right Hon. Sir Wilfrid Laurier, G. C. M. G.

Minister of Trade and Commerce—Right Hon. Sir Richard J. Cartwright, G. C. M. G.

Secretary of State—Hon. Richard William Scott, K. C.

Minister of Militia and Defense—Hon. Sir Frederick W. Bor-den, K. C. M. G.

Postmaster General—Hon. Sir William Mulock, K. C. M. G.

Minister of Agriculture—Hon. Sydney Arthur Fisher.

Minister of Finance—Hon. William Stevens Fielding.

Minister of the Interior—Hon. Clifford Sifton.

Minister of Customs—Hon. William Paterson.

Minister of Public Works—Hon. James Sutherland.

Minister of Justice—Hon. Charles Fitzpatrick, K. C.

Without portfolio—Hon. W. Templeman.

Minister of Marine and Fisheries—Hon. J. Raymond Prefontaine.

Minister of Railways and Canals—Hon. Henry R. Emmerson.

Minister of Inland Revenue—Hon. Louis P. Brodeur.

Without portfolio—Hon. Charles S. Hyman (acting minister of public works, Mr. Sutherland being in poor health).

### HOW CANADA IS RULED.

The form of Canadian government is modeled after that of Great Britain. The king is the source of authority, represented by the governor-general and privy council of 14 members. Legislature is composed of two branches; a senate of 81 members appointed for life by the king on nomination of the prime minister. The speaker's salary is \$4000, while the members receive \$1500 per session. The house of commons is the second branch, composed of 214 members, who are elected by the ballot of qualified male voters for a five years' term.

Each province has a separate local parliament and administration under a lieutenant-governor appointed by the governor-general and paid by the Dominion. Local legislation is generally left to the provinces. Counties and townships have local councils which attend to local affairs, such as schools and taxes.

The highest court is the supreme court of Canada, with a chief justice, salary \$8000, and five judges, salary, \$7000; also a court of exchequer for trying cases connected with the revenue. All other courts are in the various provinces and include courts of chancery, king's bench, common pleas, error and appeal,

superior and county, general sessions, division courts, besides numerous local police courts. Trial by jury prevails and the system of law is based largely upon that of England.

The number of representatives to the house of commons and the population to each member are as under:

Province	Number of representatives	Population to each member
Ontario .....	86	25,333
Quebec .....	65	25,367
Nova Scotia .....	18	25,532
New Brunswick .....	13	25,470
Prince Edward Island .....	4	25,812
Manitoba .....	10	25,521
British Columbia .....	7	25,522
Northwest territories .....	10	18,443
Yukon .....	1	27,219
	214	25,100

#### POPULATION OF CANADA BY PROVINCES.

	1901	% In-crease	1891	% In-crease
Canada .....	5,371,315	11.14	4,833,239	11.76
British Columbia .....	178,657	81.98	98,173	98.49
Manitoba .....	255,211	67.16	152,506	144.95
New Brunswick .....	331,120	3.06	321,263	0.00
Nova Scotia .....	459,574	2.04	450,396	2.23
Ontario .....	2,182,947	3.25	2,114,321	9.73
Prince Edward Island .....	103,259	*5.34	109,078	0.17
Quebec .....	1,648,898	10.77	1,488,535	9.52
The Territories .....	211,649	113.86	98,967	75.33

\*Decrease.

#### POPULATION.

[Cities and Towns Over 10,000]

Brantford .....	16,619	Quebec .....	68,840
Charlottetown .....	12,080	Ste. Cunegonde .....	10,912
Guelph .....	11,496	St. Henri .....	21,192
Halifax .....	40,832	St. John .....	40,711
Hamilton .....	52,634	St. Thomas .....	11,485
Hull .....	13,993	Sherbrooke .....	11,765
Kingston .....	17,961	Toronto .....	208,040
London .....	37,981	Valleyfield .....	11,055
Mile End .....	10,933	Vancouver .....	26,133
Montreal .....	267,730	Victoria .....	20,816
Ottawa .....	59,928	Windsor .....	12,153
Peterboro .....	11,239	Winnipeg .....	42,340



VALUES OF THE IMPORTS INTO AND EXPORTS FROM  
CANADA, BY COUNTRIES.

[Six months ended Dec. 31—Values given in round thousands.]

Countries	1902		1903	
	Imports	Exports	Imports	Exports
<b>British empire.</b>				
Great Britain .....	\$27,417	\$81,225	\$32,129	\$79,184
British Africa .....	34	763	39	1,379
<b>British Australasia:</b>				
Australia .....	24	1,370	40	1,398
New Zealand .....	18	256	2	301
British East Indies .....	978	20	1,417	9
British Guiana .....	105	243	794	201
British West Indies.....	734	978	1,833	1,026
Newfoundland .....	849	1,394	876	1,851
Other British colonies.....	61	42	152	99
<b>Totals .....</b>	<b>\$30,224</b>	<b>\$86,294</b>	<b>\$37,283</b>	<b>\$85,451</b>
<b>Foreign countries.</b>				
Argentine Republic .....	\$350	\$583	\$151	\$598
Austria-Hungary .....	184	/1	508	—
Belgium .....	970	1,345	1,838	736
Brazil .....	105	406	82	314
China .....	309	75	374	89
Chile .....	41	80	17	121
France .....	3,365	685	3,011	1,090
Germany .....	6,083	1,264	4,958	1,259
Holland .....	593	186	475	642
Italy .....	153	140	194	137
Japan .....	813	206	1,218	153
Norway and Sweden .....	55	61	131	258
Spain .....	595	77	618	47
Switzerland .....	430	6	641	3
United States .....	60,389	40,271	71,881	40,844
<b>West Indies:</b>				
Cuba .....	141	344	184	476
Porto Rico .....	141	210	147	225
Other foreign countries....	1,090	810	953	846
<b>Totals .....</b>	<b>\$75,816</b>	<b>\$46,688</b>	<b>\$87,390</b>	<b>\$47,835</b>
<b>Grand totals .....</b>	<b>\$106,040</b>	<b>\$132,982</b>	<b>\$124,674</b>	<b>\$133,286</b>

In experimenting with aluminum horseshoes in the Russian cavalry, it has been discovered that these shoes last longer and preserve the foot better than those of iron.

QUANTITIES AND VALUES OF GRAINS EXPORTED FROM  
CANADA DURING FISCAL YEAR ENDED JUNE 30, 1903.

Grains	Values	Bushels
Barley .....	\$457,233	947,012
Beans .....	79,801	51,095
Buckwheat .....	175,394	214,349
Indian corn .....	1,085,601	2,132,908
Oats .....	2,632,886	7,753,049
Peas .....	1,056,266	1,149,157
Rye .....	701,288	1,205,022
Wheat .....	29,088,781	38,998,923
All other .....	3,299	5,450
Total .....	\$35,280,549	52,556,965

SEA FISHERIES IN CAN-  
ADA, 1902.

Province	Value by millions
Nova Scotia .....	\$7.3
New Brunswick .....	3.9
British Columbia .....	5.2
Quebec .....	2.0
Prince Edward Island....	.8
Total .....	\$19.2

FRESH WATER FISHER-  
IES, 1902.

Province	Value by millions
Ontario .....	\$1.2
Manitoba and territories.	1.1
Total .....	\$2.3

LEGISLATURE AND VOT-  
ING.

In all the provinces there is manhood suffrage, limited by residence and citizenship, but in Prince Edward Island 15 are elected on a special real estate qualification. In all the provinces the duration of the assembly is four years, unless

sooner dissolved. Sessions are annual. In all of the provinces the speakers of the assemblies are elected by the members. In both houses members are paid. Members require no property qualification. The legislative powers of the legislatures are defined by the British North America act of 1867. Widows and unmarried women, when taxed, can vote at municipal elections in Ontario and the Northwest Territories; in Manitoba and British Columbia, all women who are taxed in their own right can vote at such elections.

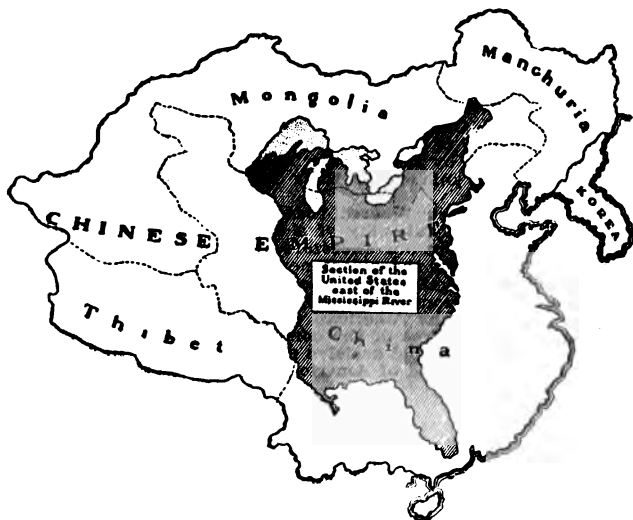
EDUCATION AND RELI-  
GION IN CANADA.

There are over 18,000 public schools in Canada, and over 1000 other schools—high, normal and model. For the maintenance of these schools \$11,000,000 is expended. As there is no state church, religious liberty, equal to that in the United States, is enjoyed. About 142 different denominations exist throughout the Dominion, embracing 99.17 per cent of the whole population.

*The Orient*

## CHINA.

The force of reform is being felt in China in nearly every phase of life. Since China had been the teacher of the eastern world when other nations were still barbarians, it was not easy for her to fully realize the changed conditions of the present age. It is possible China was first made to understand this modern world force when the troops of the allied powers



Map showing the comparative size of the Chinese empire and the eastern portion of the United States.

marched upon Peking in defence of the legations. The leaders of the empire began immediately to seriously consider this proposition of foreign aggressiveness, and finally China has aroused from its sleep of centuries. The victories of Japan have undoubtedly had their due influences as well.

It is notable in this regard that among its substantial improvements are those looking to military strength, in preparations and plans for the prompt mobilization, equipment and most improved instruction and training of a powerful army.

Heretofore China's people have been buried in study and the close pursuits of business. Hereafter, following the example of Christian nations, we may expect memorials to be erected to her successful soldiers. Referring to the Disarmament Society instituted by Austria, a circular is widely distributed calling attention to the fact that shortly after this, war was instituted between various nations. This manifesto declares that: "If there is any member of this society who has played peace-maker, we have not heard of him. Germany has, consequently, seized our Kiao-chau and Russia our Port Arthur. Since the Disarmament Society was formed, great countries have energetically purchased men-of-war and used every means to obtain a power balance." The most significant declaration of this notable address is that: "If we maintain an army, the weak countries will fear us and the strong will respect us. If we ally ourselves with Europe, then Europe will win, if with Asia, then Asia will win."

At last the Chinese have learned that their only road to national prestige is to help themselves; that Confucianism will not be abolished by modern methods; and that, aided by modern forces and influences, their religion may be widely established.

It should be remembered that this dawn of a new era in China is not the awakening of a savage nation, but that they were civilized before our ancestors and that they had a printed language, shown in the oldest newspaper in history, published at Peking, and that China was creating classics long before many western nations had established an alphabet.

Too generally the American people are ignorant of China's strenuous shaking free of the conservatism of centuries. However, it is a positive and decisive movement that will soon interest the business world of America, as well as other commercial nations.

## JAPAN.

A countless chain of islands, large and small, lying in the northwestern corner of the Pacific ocean, and close to the eastern coast of Asia, constitute the empire of Japan, an empire ruled over for more than 2550 years by an imperial house of unbroken lineage—this in marked contrast to the adjacent countries in Asia, China and Korea, where the dynastic changes have been many.

In ancient times the administrative system in this empire was very simple, there being no distinction made between military and civil affairs, but the whole nation considered as one big family, with the emperor over it. During the middle ages, however, the military classes pushed the court into the background, and for several centuries the real power of government was vested in several successive regencies, until in 1867, when the imperial regime was again established. Twenty-two years after this restoration, a constitution was promulgated and

Japan became a constitutional monarchy, with the imperial prerogative strictly defined.

In the existing administrative system there is the privy council as the supreme advisory organ to the emperor, while on the other hand there is the cabinet as central administrative headquarters, having under it the nine departments of state—the departments of foreign affairs, home affairs, finance, war, the navy, justice, education, agriculture and commerce, and communications.

In 1899 Japan had a population of 44,260,604 people, of whom 22,329,925 were males and 21,930,681 females. The large majority of these people are engaged in agricultural pursuits, chiefly rice culture, Japan's biggest industry, and in silk worm raising, which comes next in importance as an article of domestic production, and as an article of export leads all others. On account of the position of the country and its many indentations, the fishing industry is naturally large, and it is estimated that there are 900,000 families of fishermen. Fish, it should be said, forms, together with rice, almost the entire diet of the people, for meat is very little used.

Only 15.7 per cent of the total area of Japan, or 14,995,272 acres of the land, is arable, and it is estimated that 55 per cent of the agricultural families cultivate less than two acres apiece. Of course it is the low standard of living that enables the people to get along with farms of this size, though the income of most of the owners is generally increased by engaging in silk worm raising, reeling silk and working for wages in the intervals of farm work. The government has encouraged modern methods of farming by the establishment of experiment stations and the maintenance of six agricultural schools.

The principal exports from Japan are raw silk, habutaye (silk tissue), cotton yarns, matches, fancy matting, tea, camphor, marine products, copper, coal, etc. Of these, raw silk and habutaye lead in volume and value, and have their best customers in the United States and France. The principal imports are machinery, iron ware, petroleum, sugar, raw cotton, cotton fabrics and woolen goods. The following table shows the value of exports and imports of the principal commodities for five years beginning 1898, the values being given in millions of yen (not quite 50 cents):

Year	Exports yen	Imports yen	Total yen	Excess of imports yen
1902 .....	258	271	530	13
1901 .....	252	255	508	3
1900 .....	204	287	491	82
1899 .....	214	220	435	5
1898 .....	165	277	443	111

The department of education superintends the educational affairs of the country, besides maintaining institutions essential for the state. According to statistics compiled in 1901, there

were 20,284 primary schools throughout the country, together with 6726 branches, making a total of 27,010. The teachers on duty numbered 102,700 and pupils in attendance 4,980,604. There were also 54 normal schools and two schools for the blind, and deaf and dumb, one at Kyoto and the other at Tokyo. The imperial library at Tokyo is maintained by the government and has 418,582 volumes. There are 49 other libraries in the country and these contain altogether 408,570 books.

In 1902, Japan had over 81,903 miles of telegraph lines and telephone lines extending over about 105,762 miles. The railroad service possessed 4237 miles on March 31, 1903.

## *Immigration*

There is a slight decrease in the immigration figures for the fiscal year ending June 30, 1904, there being in all 812,870 immigrants who arrived in this country, against 857,046 for the year ending June 30, 1903. Italy sent us the largest number, though Russia and Austria-Hungary were not far behind. Immigrants came also from all the other European countries, China, Japan, India, Turkey in Asia, Africa, Australia, Philippine Islands, British North America, Central America, Mexico, South America and West Indies. During the first ten months of 1904, ending September 30, the number of immigrants to arrive at the various ports in the United States was as follows: Baltimore 39,696, Boston 48,500, New York 452,034, Philadelphia 14,159, San Francisco 14,159.

### IMMIGRATION STATISTICS FOR ELEVEN YEARS.

Years ending June 30:	Sex of immigrants		Total
	Male	Female	
1904 .....	549,100	263,770	812,870
1903 .....	613,146	243,900	857,046
1902 .....	466,369	182,374	648,743
1901 .....	331,055	156,863	487,918
1900 .....	304,148	144,424	448,572
1899 .....	195,277	116,438	311,715
1898 .....	135,775	93,524	229,299
1897 .....	135,107	95,725	230,832
1896 .....	212,466	130,801	343,267
1895 .....	149,016	109,520	258,536
1894 .....	169,274	116,357	285,631

### THEATER FIRES.

Brooklyn Theater, 1876, 295 lives lost.  
 Ring Theater, Vienna, 1881, nearly 1000.  
 Charity Bazaar, Paris, 1897, over 150.  
 Iroquois Theater, Chicago, 1903, between 600 and 700.

## **Transportation and Communication**

### **PROGRESS OF GOOD ROADS LEGISLATION.**

[By Assistant Director M. O. Eldridge, Office of Public Road Inquiries, Department of Agriculture, prepared especially for the American Agriculturist Year Book and Almanac.]

Road legislation in the various states is steadily progressing along practical lines. The old method of working out the road tax is now generally recognized as totally inadequate and is being superseded by some form of cash tax, the revenue thus secured being expended under the direction of expert road engineers in the construction of improved highways. Many of the states, especially in the south, are working their convicts on the public roads with most satisfactory results, the convict labor being thus removed from competitive lines of work and placed in non-competitive. In many states, counties are authorized to issue bonds for the purpose of raising funds for road improvement. In some states the revenues arising from certain specified sources are applied to the improvement of the public highways.

The most important feature of state legislation, however, is state aid. From the following statistics it will be seen that the New England states, the four central states, and Maryland, Ohio, Illinois, Iowa and Michigan, have all adopted this system or have established state highway commissions. In some cases the state pays half the cost of the roads, in others one-third, in others one-fourth. This system provides ample funds, skilled supervision, uniformity of plans, and economy in expenditure.

### **LEGISLATION, STATE APPROPRIATIONS AND MILEAGE OF ROADS IN VARIOUS STATES.**

**Alabama**—Recent legislature passed a general law permitting counties to vote at any time for bond issue or special levy. About 1000 miles of gravel (including chert) roads and 300 miles of stone road, already built.

**California**—State has a bureau of highways with one commissioner. Most of the roads constructed by county boards of supervisors by direct taxation. State controls 140 miles of mountain roads and pays entire cost of construction. State spent for mountain roads in 1897, \$44,900; in 1899, \$74,500; in 1901, \$23,060; in 1903, \$58,360.

**Connecticut**—Total road mileage 15,000. About 500 miles of permanent roads have been constructed since 1895 at about \$4000 per mile, the state paying two-thirds and in some cases three-fourths of the cost, the balance being paid by the towns. State spent between 1896 and 1902 the sum of \$1,233,000, the counties \$310,942. The last legislature appropriated for state work for 1903-4, \$225,000.

Delaware—State aid bill passed in April, 1903, providing for three commissioners and for \$30,000 a year for two years, the state to pay half the cost and the counties half. The money is to be equally distributed among the three counties, Newcastle, Sussex and Kent.

Florida—200 miles of shell and gravel roads and 150 miles of stone roads already built. The last legislature set aside proceeds of Indian war claims recently authorized by Congress for road improvement. From this sum state will realize over a half million dollars. In June, 1903, the legislature provided that all money in the internal improvement fund, or which may be derived from the sale of swamp lands, shall be devoted to the construction of hard roads. The money to be divided among the several counties in proportion to their assessed valuation. The legislature of June, 1899, provided that all one-year convicts shall be worked on the public roads.

Georgia—Total road mileage, 45,000; 1000 miles of gravel roads and over 200 miles of stone road already built. Convicts used and money raised by direct taxation.

Illinois—In 1903 the legislature provided for the appointment of a good roads commission, consisting of three persons to study road problems in the state and to report to the next legislature recommending suitable legislation. The commission is now engaged in the work and is making an effort to carry into effect the existing law, which provides that the convicts at state penitentiaries shall be used in preparing rock for road building, such material to be furnished the counties free of cost.

Indiana—Total mileage, 58,000. Said to have 8000 miles of good gravel roads, all built by local assessment, no state aid being provided.

Iowa—Total mileage, 100,257. An act was passed by the general assembly and approved April 13, 1904, providing for the appointment of a state highway commission and designating the Iowa state college at Ames to act as such commission.

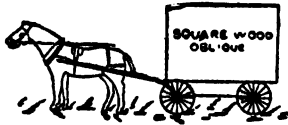
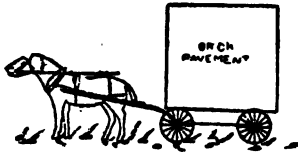
Kentucky—Mileage of gravel roads, 2000; of stone roads, 5600, mainly built as toll roads, but now free.

Maine—State aid was adopted in 1901 to a small extent, the law providing that any city or town may receive from the state treasury one-half the sum actually appropriated for a state road within the corporate limits of such city or town, but the sum to be received from the state shall in no case exceed \$200.

Maryland—Total mileage, 16,000, of which 497 are toll roads. There are about 900 miles of stone, shell and gravel roads maintained by the counties. It is estimated that the counties spend \$600,000 annually for road maintenance and that the people of the state pay \$140,000 annually in tolls. Highway commission established in 1896. The general assembly passed an act in 1904 providing state aid and appropriating \$200,000 for the purpose. The amount received by each county is in direct proportion of the road mileage of the county to the total mileage of the state.

Massachusetts—Total mileage, estimated, 20,000. The state appropriates annually \$490,000 in the form of state aid. The state





VALUE OF IMPROVED ROADWAYS.

Comparative capacity of an animal pulling loads over different kinds of highway.

pays the entire cost of the road, but 25 per cent of the cost is assessed on the counties. The recent legislature appropriated \$2,250,000, to be expended for state highways during the next five years; 504 miles built or under contract up to January 1, 1904. Highway commission established in 1894.

Michigan—Every township has right to raise money by bonding to the extent of 5 per cent of its valuation to build roads. Any county may adopt the county road law and assess a 2 mill tax. Has state highway department, but no money has been appropriated for state aid. Total mileage, 80,000.

Missouri—89,946 miles of public roads, of which 1262 miles are macadam, gravel and slag roads, the remainder being earth roads. No state aid.

New Hampshire—Legislation has been enacted providing for the appointment of a state engineer, who is to prepare a highway map of the state and plan a system of continuous main highways, \$15,000 being appropriated for the purpose. It also provided that the governor and council shall prepare for the next general assembly a bill providing fully for the inauguration of a system of state work and state expenditure. The next general assembly meets in 1905.

New Jersey—State aid was adopted in 1891 and became operative in 1892. In 1895 a more comprehensive law was enacted under which the state bore one-third of the expense, property owners on line of road one-tenth and the county the balance. Another law was passed in 1903 permitting an increase in the state appropriation to \$400,000, giving the counties the right to assess upon their ratables for road purposes to the extent of 1 per cent, exclusive of the state appropriation, and allowing the townships to pay 10 per cent instead of the property owners along the line. Under the law of 1895, 900 miles of roads have been built; under the law of 1903, 65 miles have been built and several hundred miles projected. Total number built by the state to July 1, 1904, 1100. The state appropriates \$250,000 per annum as state aid. Total mileage, 20,000.

New York—State aid was adopted in 1898, the state paying 50 per cent of the cost of roads, the counties 35 per cent, and the towns or abutting property owners 15 per cent. Total mileage, 74,097. Up to July 1, 1904, nearly 700 miles of roads were constructed or in process of construction, in accordance with state aid law. Total amount appropriated by the state, counties and towns for improvement, repair and maintenance of public highways, \$11,707,667.24. Total amount available for year 1904, \$3,524,480.19. The legislature has once passed a constitutional amendment providing that the state may bond itself for \$50,000,000, of which \$5,000,000 is to be available each year for ten years for road improvement. This amendment must be passed by the next legislature and then submitted to the popular vote before it becomes effective.

North Carolina—Has a highway commission established three years ago. Has 400 miles of gravel roads and 300 miles of stone roads.

**Ohio**—The last general assembly enacted legislation providing for a state highway department, and for state aid in the following proportion: One-fourth to be paid by the state and three-fourths to be a county charge, but one-third of said three-fourths to be paid by the township. In apportioning the 25 per cent to be paid by the township, 10 per cent shall be a charge upon the whole township and 15 per cent a charge upon the abutting property. No appropriation for construction under this act has yet been made. The total mileage of the state is about 80,000.

**Pennsylvania**—The legislature of 1903 adopted a state aid law, approved April 15, 1903, creating a state highway department, and providing that two-thirds of the cost of rebuilding roads is to be borne by the state, one-sixth by the county, and one-sixth by the township. A total appropriation of \$6,500,000 was made, distributed as follows: \$500,000, for each of the first two years, \$1,250,000 for each of the next two years, and \$1,500,000 for each of the next two years. The total mileage is 99,224.

**Rhode Island**—The last legislature passed a resolution appropriating \$100,000 for the construction and maintenance of highways under the direction of the state board of public roads, which was created by the preceding legislature. Out of 2240 miles of highway in Rhode Island, about 500 miles have been improved by the use of gravel and stone.

**South Carolina**—Counties are allowed to hold elections to decide upon bonding for permanent improvement of the highways to an amount not to exceed \$200,000, or 8 per cent of the assessed valuation. Other legislation has been enacted permitting counties to work convicts with ten-year sentences in chain gangs.

**Tennessee**—1200 miles of gravel roads and 1000 miles of stone roads in the state. No state aid.

**Texas**—2000 miles of gravel roads and more than 200 miles of stone roads. No state aid.

**Vermont**—The Vermont plan for state aid assesses an annual state tax of 5 mills on the dollar, to which is added the revenues from the local option license law. The fund for the year 1904 is \$130,811.37. This is apportioned to the towns in the proportion the mileage of each bears to the total mileage of the state. Vermont has a state highway commissioner. Total road mileage, 14,019.

**Virginia**—300 miles of gravel roads and 550 miles of stone roads, mainly built as toll roads. State legislation not yet established.

Public sentiment in favor of better roads has grown so rapidly that the office of public road inquiries is being constantly appealed to for engineers skilled in the art of road building to take charge of state and county work, and the demand for such men exceeds the supply. It would therefore seem advisable that in connection with this office there should be established in Washington a post-graduate school, where graduates in civil engineering from the land-grant colleges could secure a thorough course in road building.

## OUR MERCHANT MARINE SINCE 1890.

Tonnage of the sailing and steam vessels of the merchant marine of the United States employed in the foreign and coast-wise trade and in the fisheries.

Year ended June 30	Foreign trade, tons thousands	Coastwise trade, tons millions	Whale fisheries, tons thousands	Cod and mackerel fisheries, tons thousands	Total millions of tons	Annual increase or decrease, per cent
1903	879	5.1	9.5	57.5	6.0	4.99
1902	873	4.8	9.3	56.6	5.7	4.95
1901	879	4.5	9.5	52.4	5.5	6.96
1900	816	4.2	9.8	51.6	5.1	6.18
1899	837	3.9	11.0	50.6	4.8	2.41
1898	726	3.9	11.4	52.3	4.7	-0.40
1897	792	3.8	12.7	66.6	4.7	1.38
1896	829	3.7	15.1	68.6	4.7	1.47
1895	822	3.7	15.8	69.0	4.6	-1.30
1894	899	3.6	16.4	71.5	4.6	-2.90
1893	883	3.8	16.6	70.5	4.8	1.26
1892	977	3.7	17.0	69.4	4.7	1.71
1891	988	3.6	17.2	68.9	4.6	5.88
1890	928	3.4	18.6	68.3	4.4	2.71

## STEAMBOAT INSPECTION.

[For fiscal year ending June 30, 1903; latest published report.]

Division	Vessels inspected, number and tonnage					
	For steamers		Dom. steamers		Motor vessels	
	No.	Tonnage	No.	Tonnage	No.	Tonnage
Pacific coast.....	29	124,712	984	316,274	39	2,260
Atlantic coast .....	216	1,347,090	3,659	1,197,818	66	2,977
Western rivers .....	4	819	918	137,492	31	1,143
Northern lakes .....	61	47,030	2,095	1,479,374	—	—
Gulf and coast.....	50	147,003	640	128,163	17	470
Total .....	360	1,666,654	8,296	3,259,121	153	6,850

Total number of accidents resulting in loss of life during the fiscal year ending June 30, 1903: Fire, one; collision, 23; breaking of steam pipes, mud drums, etc., three; explosions, four; snags, wrecks and sinking, 15; accidents to machinery, three; total, 49; decrease over previous year of six.

Total number of lives lost by accident from various causes during the fiscal year ending June 30, 1903: Fire, one; collisions, 49; breaking of steam pipes, mud drums, etc., 14; explosions or accidental escape of steam, 23; snags, wrecks or sinking, 49; accidental drowning, 145; miscellaneous causes, 11; total, 292; decrease over previous year of 153.

FOREIGN CARRYING TRADE OF UNITED STATES.

[In millions of dollars.]

	1860	1870	1880	1890	1900	1903
American vessels .....	507	352	258	202	195	214
Foreign vessels .....	255	638	1124	1371	1894	2726
Total sea trade.....	762	991	1482	1573	2089	2240
Land vehicles .....	—	—	20	73	154	205
Total trade .....	762	991	1503	1647	2244	2445
			Per cent.			
Trade of American vessels..	66	35	17	12	9.3	9.1

**United States Railway Statistics**

[Poor's Railway Manual, 1903.]

RAILROADS OF THE UNITED STATES BY STATES AND TERRITORIES.

[Miles completed, December 31, 1902.]

States and territories	Total miles	States and territories	Total miles
Alabama .....	4,357.12	New Jersey .....	2,238.14
Arkansas .....	3,530.99	New York .....	8,137.49
California .....	5,772.59	North Carolina .....	3,798.03
Colorado .....	4,801.54	North Dakota .....	3,079.35
Connecticut .....	1,025.90	Ohio .....	8,971.76
Delaware .....	337.14	Oregon .....	1,711.94
Florida .....	3,435.81	Pennsylvania .....	10,508.45
Georgia .....	6,109.73	Rhode Island .....	209.29
Idaho .....	1,433.91	South Carolina .....	3,011.44
Illinois .....	11,398.07	South Dakota .....	3,027.74
Indiana .....	6,801.87	Tennessee .....	3,280.87
Iowa .....	9,559.48	Texas .....	10,874.17
Kansas .....	8,803.18	Utah .....	1,611.40
Kentucky .....	3,177.74	Vermont .....	1,052.31
Louisiana .....	3,065.01	Virginia .....	3,870.58
Maine .....	2,002.13	Washington .....	3,112.31
Maryland .....	1,369.00	West Virginia .....	2,645.97
Massachusetts .....	2,114.94	Wisconsin .....	6,873.40
Michigan .....	8,241.10	Wyoming .....	1,313.31
Minnesota .....	7,285.40	Arizona .....	1,617.49
Mississippi .....	3,099.15	District of Columbia..	24.87
Missouri .....	7,148.03	Indian Territory .....	2,144.03
Montana .....	3,234.27	New Mexico .....	2,349.20
Nebraska .....	5,777.66	Oklahoma .....	1,663.83
Nevada .....	960.53		
New Hampshire .....	1,191.95	United States .....	203,131.61

In Europe, 86,592 people die each year from accident; in the United States, 86,000 in the same time.

Nine hundred people in 1,000,000 die of old age.

## PRINCIPAL RAILROADS OF THE UNITED STATES AND CANADA.

System	Headquarters	Track stock, mil'ns	Capital Funded debt, mil'ns	Express line
Arch, Top & Santa Fe	Chicago	8,063.91	216	Wells, Fargo & Co
Atlantic Coast Line	Wilmington, N C	3,533.7	42	Southern
Baltimore & Ohio	Baltimore	4,339.54	160	United States
Balt & Ohio So'w'h	—	—	—	—
Boston & Albany	Boston, Mass	304.5	25	Adams, American
Boston & Maine	Boston, Mass	2,265.5	28	American
Buff, Roch & Pitts	Rochester, N Y	472.08	15	American
Bur & Mo Riv in Neb.	—	—	—	—
Bur, Ced Rap & Nor Cedar Rapids, Ia	—	1,310.55	30	United States
Canada Atlantic	Ottawa, Ont	468.4	7.1	Canadian
Canadian Northern	Toronto, Ont	1,273	24.7	Canadian
Canadian Pacific	Montreal, Que	10,623.8	184.3	Dominion-No Pac
Central Georgia	Savannah, Ga	1,922.76	5	Canadian
Central Pacific	Portland, Ore	1,348.38	87	Southern
Central R R of Ga	Savannah, Ga	1,844.67	5	Southern
Central R R of N J	New York	677	27	U S and Adams
Central Vermont	St Albans, Vt	531	3	American
Chesapeake & Ohio	Richmond, Va	1,636.6	64	Adams
Chicago & Alton	Chicago, Ill	919.64	40	United States
Chicago & E Illinois	Chicago, Ill	737.68	20.4	American
Chic & Grand Trunk	Montreal, Que	59.37	1	National
Chic & Northwestern	Chicago, Ill	5,921.53	100	American
Chic & West Mich	Grand Rapids, Mich	—	—	American
Chic, Bur & Quincy	Chicago, Ill	8,724.66	110	Adams
Chicago Gt Western	St Paul, Minn	929.51	85	Wells, Fargo & Co
Chic, Mil & St Paul	Chicago, Ill	6,754.10	100.48	United States
Chic, Rock I & Pac	Chicago, Ill	5,579.12	75	U S, W, F & Co
Cin, Ham & Day	Cincinnati, O	651.60	16	United States
Clev, Cin, Chic & St L	Cincinnati, O	2,287.10	38	American
Colorado & Southern	Fort Worth, Tex	1,120.9	48	Wells, Fargo & Co
Delaware & Hudson	Albany, N Y	717.80	34.407	National
Del, Lack & West	Exchange Pl, N Y	947.81	26.2	United States

Denver & Rio Grande, Denver, Col	2,390	82.4	45.62	Denver & R Grande
Duluth, S Shore & Atl. Marquette, Mich	576	23	23	Wells, Fargo & Co
Erie .....	2,318.29	177	178.9	American-National
Fitchburg .....	779	24	21	American
Flint & Pere Marq... Boston, Mass	—	—	—	Southern
Fla. Cent & Pen... East Saginaw, Mich	805.79	—	8.17	Pacific
Ft Worth & Den City Fort Worth, Tex	453.57	6	9	Adams
Grand Rap & Ind... Grand Rapids, Mich	589.95	—	—	Canadian-National
Grand Trunk .....	4.199	125.8	97.97	Great Northern
Great Northern .....	5,849	10	17	Wells, Fargo & Co
Houston & Tex Cent. Houston, Tex	668	95	129	American
Illinois Central .....	4,283.9	—	—	Canadian-Dominion
Intercolonial .....	1,165.8	—	—	Pacific
Internat & Gt Nor... Moncton, N B	1,006.7	9.7	23	Adams
Iowa Central .....	558.4	14	10	United States
Lake Erie & Western. New York	887	23.6	19.8	American-U S
Lake Shore & Mich So. Cleveland, O	1,411	50	51	United States
Lehigh Valley .....	1,399.6	40.4	41.9	Long Island
Long Island .....	395.9	12	21.9	Adams, Southern
Louisville & Nashville. Louisville, Ky	5,529.8	60	89.6	American
Maine Central .....	815.8	5	12.4	American
Michigan Central .....	1,653	18.7	21	United States
Minneapolis & St Louis. Minneapolis, Minn	641.8	10	17.8	United States
Minn. St P & S S M.. Minneapolis, Minn	1,430.8	21	34.6	Western
Mo, Kan & Tex .....	2,554.8	69	78.6	American
Missouri Pacific .....	3,488.4	77	54	Pacific
Mobile & Ohio .....	874	7.6	23.9	Southern
Nash, Chatt & St L.. Nashville, Tenn	1,195.8	10	16	Southern
New England .....	675.5	25	25	United States
N Y Cent & Hud Riv. Albany, N Y	3,319.5	131.9	193.7	American-National
N Y, Chid & St L... Cleveland, O	523	30	19.4	National
N Y, N H & H... New Haven, Ct	2,057.6	70.8	6	Adams (probably)
N Y, Ont & West... New York	480	58	16.9	Adams
N Y, Sus & West... New York	238	26	16	Wells, Fargo & Co
Norfolk & Western... Roanoke, Va	1,685	89	53	Southern

\* Merged in B & O. † Chic, Bur & Quin. ‡ Now part of Chic, R I & Pac. § See Pere Marquette.

## PRINCIPAL RAILROADS OF THE UNITED STATES AND CANADA—Continued.

System	Headquarters	Track mileage mil'ns	Capital stock, mil'ns	Funded debt, mil'ns	Express line
Northern Pacific	.....New York	5,355.5	155	284.7	Northern Pacific
Northwestern Line	.....Chicago	9,030	—	—	—
*Oregon Short Line	.....S Lake City and N Y	1,734.57	—	—	Pacific Wells, Fargo & Co
*Ore R & Nav Co	.....Portland, Ore	1,124	—	—	Adams
Pennsylvania	.....Philadelphia	3,705.7	204	140	Pacific-W, F & Co
Pere Marquette	.....Detroit, Mich	1,828	28	31	Southern-Adams
Queen & Crescent	.....80 Broadway, N Y	1,156	—	—	—
Reading	.....Philadelphia, Pa	4,558.9	140	70	National-American
Rutland	.....Rutland, Vt	416.33	9.25	11.16	Wells, Fargo & Co
San Ant & Aran Pass	.....San Antonio, Tex	784.5	5	18.9	Southern
Seaboard Air Line	.....Portsmouth, Va	2,606.5	62.5	52.5	Wells, Fargo & Co
Southern Pacific	.....San Francisco, Cal	8,809	197.8	46	Wells, Fargo & Co
Southern Railway	.....Washington, D C	6,765.9	180	129	Southern
St Jos & Gr Island	.....St Joseph, Mo	312.21	13.5	3.5	Wells, Fargo & Co
St L & San Fran	.....St Louis, Mo	3,414	100	109	Wells, Fargo & Co
St Louis Southwestern	.....St Louis, Mo	1,293	365	42	Pacific
Ter Haute & Indianap	.....St Louis, Mo	447	2	2.5	Adams
Texas & Pacific	.....Dallas, Tex	1,745	38.7	53	Pacific
Toledo & Ohio Central	.....Toledo, O	436	10	8.5	United States
Tol, St L & West	.....Frankfort, Ind, and Omaha, Neb	450.7	20	15.5	National
Union Pacific	.....120 Broadway, N Y	5,775	267	248	Pacific
Wabash	.....St Louis, Mo	2,483	52	92	Pacific
West N Y & Pa	.....Philadelphia	593.9	20	29.9	—
Wisconsin Central	.....Milwaukee	1,042.5	30	26.8	National

\*Union Pacific.



SUMMARY OF RAILROAD EMPLOYEES.

	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	1902
General officers, number in thousands.....	—	—	5	5	5	4	4	4	4	4	4
number per 100 miles of line.....	—	—	3	3	3	3	3	3	3	2	2
Other officers, number in thousands.....	—	—	1	2	2	3	3	4	4	4	5
number per 100 miles of line.....	—	—	1	1	1	2	2	2	2	3	3
General office clerks, number in thousands...	25	27	24	26	26	26	26	26	26	34	37
number per 100 miles of line.....	16	16	14	15	14	15	15	15	16	17	18
Station agents, number in thousands.....	26	28	28	29	29	30	30	30	30	31	32
number per 100 miles of line.....	16	17	16	16	16	16	17	16	16	17	17
Other station men, number in thousands.....	69	75	71	73	75	74	78	83	89	94	105
number per 100 miles of line.....	43	44	41	41	42	41	43	45	47	49	53
Engine men, number in thousands.....	36	38	35	34	35	35	37	39	42	45	48
number per 100 miles of line.....	23	23	20	20	20	19	20	21	22	23	24
Firemen, number in thousands.....	37	40	36	35	36	36	38	41	44	47	50
number per 100 miles of line.....	23	24	21	20	20	20	21	22	23	24	25
Conductors, number in thousands.....	26	27	24	24	24	25	25	26	28	29	32
number per 100 miles of line.....	16	16	14	14	14	14	14	15	15	16	16
Other trainmen, number in thousands.....	68	72	63	62	64	63	68	69	74	84	91
number per 100 miles of line.....	42	43	36	35	36	35	36	36	37	39	43
Machinists, number in thousands.....	28	30	29	27	29	28	28	30	32	34	39
number per 100 miles of line.....	18	18	17	16	16	15	16	16	17	18	19
Carpenters, number in thousands.....	40	41	36	35	38	37	40	42	46	48	51
number per 100 miles of line.....	25	25	21	20	21	20	22	23	24	25	26
Other shopmen, number in thousands.....	87	93	84	88	95	91	99	103	114	120	136
number per 100 miles of line.....	54	55	48	50	53	50	54	55	60	62	68
Switch, flag and watchmen, thousands.....	42	46	43	43	44	43	47	48	50	47	50
number per 100 miles of line.....	26	27	25	24	24	24	25	26	26	24	25
Telegraph operators, dispatchers, thousands.	20	22	22	20	21	21	22	23	25	26	28
number per 100 miles of line.....	13	13	13	12	12	12	12	12	13	13	14
Floating employees, number in thousands.....	5	6	7	5	5	6	6	6	6	7	7
number per 100 miles of line.....	3	4	4	3	3	3	3	3	4	4	4
All other employees, number in thousands.....	98	105	85	83	88	90	98	107	125	131	147
number per 100 miles of line.....	60	62	48	47	49	49	53	57	65	67	63

## UNITED STATES RAILROADS.

	1883	1890	1895	1902
Length of lines, in thousands of miles.....	120	163	179	199
Capital stock, in billions of dollars.....	3	4	5	6
Dividends, per cent upon stock.....	2.77	1.80	1.58	2.93
Funded debt, in billions of dollars.....	3	5	5	6
Interest, per cent upon bonds and debt....	4.58	4.13	4.09	4.03
Passengers carried, in millions.....	312	520	529	655
Avg. receipts p passenger, cents p mile...2.42		2.17	2.0	2.0
Freight carried, in millions of tons.....	400	691	755	1192
Average receipts per ton, cents per mile... 1.0		0.93	0.84	0.76
Gross earnings of railroads, thousand dol- lars per mile .....	7	6	6	8
Net earnings of railroads, thousand dol- lars per mile .....	2	2	1	2
Per cent of expenses to earnings.....	63	68	70	67

## RAILWAY FACTS.

In 1904 there were more than 200,000 miles of railroads in this country. There are 37,000 passenger and 1,600,000 freight cars; locomotives number 41,000, of which 10,000 are for passenger service. A modern locomotive costs from \$15,000 to \$18,000. Freight trains carry 1,250,000,000 tons per year. It would require 25,000,000 teams to do the work now done by railways. The passenger rolling stock would make a solid train 500 miles long.

## RAILWAY STATISTICS OF CHIEF NATIONS.

[Railway Gazette.]

1900	Miles open	1900	Miles open
Great Britain .....	21,864	Scandinavia .....	8,320
France .....	26,611	Belgium .....	3,948
Germany .....	31,933	Switzerland .....	2,357
Russia .....	29,892	Europe (total) .....	176,174
Spain .....	8,300	United States .....	197,237
Italy .....	9,810	The world .....	490,962

## RAILROAD ACCIDENTS IN THE UNITED STATES.

[From report of interstate commerce commission.]

	1902		1901		1900	
	Killed	Injured	Killed	Injured	Killed	Injured
Passengers .....	303	6,089	282	4,988	249	4,128
Employees .....	2,516	33,711	2,675	41,142	2,550	39,643
Total .....	2,819	39,800	2,957	46,130	2,799	43,771

In 1902 there were 5042 train collisions and 3633 derailments, or a total of 8675 accidents, involving a total monetary loss of \$7,645,406.

## STREET AND ELECTRIC RAILWAYS, 1890 AND 1902.

[United States Census Reports.]

Geographic divisions	Year	Population*	Total no. fare passengers carried	Average no. rides per inhabitant
United States.....	1902	75,994,575	4,809,554,438	63
	1890	62,622,250	2,023,010,202	32
Increase .....		13,372,325	2,786,544,236	31
North Atlantic .....	1902	21,046,695	2,618,528,979	124
	1890	17,401,545	1,141,187,460	66
Increase .....		3,645,150	1,477,341,519	58
South Atlantic .....	1902	10,443,480	332,541,075	32
	1890	8,857,920	101,647,174	11
Increase .....		1,585,560	230,893,901	21
North central .....	1902	26,333,004	1,344,000,951	51
	1890	22,362,279	538,309,887	24
Increase .....		3,970,725	806,691,064	27
South central .....	1902	14,080,047	210,103,861	15
	1890	10,972,893	98,005,026	9
Increase .....		3,107,154	112,098,835	6
Western .....	1902	4,091,349	304,379,572	74
	1890	3,027,613	143,860,655	48
Increase .....		1,063,736	160,518,917	26

\*Population shown for 1902 is that reported by census of 1900.

From this table it appears that the most extensive use of street and electric railways is in the North Atlantic states, where the average number of rides per inhabitant in 1902 was 124; the Western states come next with an average of 74. The greatest increase in this respect is shown for the South Atlantic states, where the average was almost three times as great in 1902 as it was in 1890. The average number of rides per inhabitant for the entire United States has almost doubled during the 12 years.

## STREET AND ELECTRIC RAILWAYS, CENSUS FIGURES.

Character of power	1902		1890		% increase	
	Number of companies	Miles single track	Number of companies	Miles single track	Number of companies	Miles single track
United States.....	849*	22,589.47	761*	8,123.02	11.6	178.1
Electric .....	747	21,920.07	126	1,261.97	492.9	1,637.0
Animal .....	67	259.10	506	5,661.44	86.8	95.4
Cable .....	26	240.69	55	488.31	52.7	50.7
Steam .....	9	169.61	74	711.30	87.8	76.2

\*This total is based on motive power.

## COMPARATIVE SUMMARY, ALL COMPANIES, 1890 AND 1902.

Items	1902	1890	% in-crease
Number of companies .....	987	706	39.8
Cost construction and equipment.	\$2,167,634,077	\$389,357,289	456.7
Capital stock issued .....	\$1,315,572,960	\$285,058,133	355.1
Funded debt outstanding.....	\$992,709,139	\$189,177,824	424.7
Earnings from operation.....	\$247,553,999	\$90,617,211	173.2
Operating expenditures.....	\$142,312,597	\$62,011,185	129.5
% operating expenses of earnings.	57.5	68.4	—
Number of passenger cars.....	60,290	32,505	85.5
Number fare passengers carried..	4,809,554,438	2,023,010,202	137.7
Number of employees* .....	133,641	70,764	88.9

\*Exclusive of salaried officials and clerks.

## STARTING A RURAL TELEPHONE LINE.

Every up-to-date farmer should have a telephone. He cannot afford to be without the great time saver and distance annihilator. The way to secure telephone service is to try to get it from an existing company if possible. If they will not give service at reasonable rates, say for \$10 to \$18 per year, depending upon the distance you are from the line or from central, then organize your own company, build your own lines and operate them.

The first thing is to agitate and discuss the question among the neighbors and business men who should be connected by telephone. Call a meeting, appoint a committee on organization and construction, who will arrange to form a stock company and incorporate under the laws of the state. This will not hinder the fullest co-operation on the part of all who desire to work or furnish materials, because they can take their pay in stock. Encourage many small stockholders rather than a few large ones.

Before incorporating, make a careful canvass of the territory and get promises in writing from all who will take instruments. Then make estimates of the number of miles of line that will have to be built, not forgetting to secure a franchise from the highway commissioners to build along the highway, also consent from the property holders.

On nearly all lines it is best to build a two-wire or a metallic circuit, which will avoid "crosstalk." If, however, it is for most part a country line and away from trolley and electric light disturbances, and also if the service is to be purely local, it may be most economical to build a one-wire or grounded circuit line. In either case it will be best to buy "bridging" telephones, rather than the "series," and to buy good ones, which need not cost more than \$13 to \$15 each. The wire should be No. 12 BB galvanized, which weighs about 165 pounds to the mile.

The poles generally should be 25 feet long and 8 to 9 inches in diameter at a point  $4\frac{1}{2}$  feet from the butt. Holes should be 4 to  $4\frac{1}{2}$  feet deep. Chestnut or cedar poles are both light and durable. They will probably cost \$1.25 each delivered at the hole, all pegged and ready to set. Small poles rot off too quickly. Holes can be dug for 10 to 20 cents each, depending upon the nature of the soil. The poles should be set from 150 to 175 feet apart. For heavy lines the former is better; for straight lines that carry but two wires the latter distance will do. Avoid kinks and shun trees as you would a pestilence. It will cost more in the end to hunt trouble and make repairs caused by trees than it would to have set poles and dodged them. A line will cost complete from \$75 to \$100 per mile, if it is built to stay, and contains crossarms, etc., to carry several wires. For raising poles a "dead man" and four or five very live men are needed to do the work fast.

### AMERICAN TELEPHONE AND TELEGRAPH COMPANY STATISTICS.

[From January 1, 1900-1904.]

	1900	1901	1902	1903	1904
Exchanges .....	1,239	1,348	1,411	1,514	1,609
Branch offices .....	1,187	1,427	1,594	1,861	2,131
Miles wire on poles and buildings .....	524,123	644,730	841,140	1,109,017	1,358,140
Miles wire underground	489,250	705,269	883,679	1,328,685	1,618,691
Miles wire submarine..	3,404	4,203	4,200	6,048	6,358
Total miles wire.....	1,016,777	1,354,202	1,729,019	2,443,750	2,983,189
Total circuits .....	422,620	508,262	592,467	742,654	798,901
Total employees .....	25,741	32,837	40,864	50,350	53,795
Total subscribers .....	632,946	800,880	1,020,647	1,277,983	1,525,167

### THE TELEGRAPH BUSINESS.

[Statistics of the Western Union Telegraph Company.]

	1900	1901	1902	1903	1904
Miles of line.....	192,705	193,589	196,115	196,517	199,350
Miles of wire.....	933,153	972,766	1,029,984	1,089,212	1,155,405
Number of offices.....	22,900	23,238	23,567	23,120	23,458
No. messages sent, millions..	63	65	69.3	69.7	67.9
Receipts, millions of dollars.	24	26	28	29	29
Expenses, millions of dollars.	18	19	20.7	20.9	21.3
Profits, millions of dollars...	6	6	7	8	7
Average toll per message....	30.8	30.9	31.0	31.4	31.7
Average cost per message...	25.1	25.1	25.7	25.6	26.1

## GROWTH OF THE TELEGRAPH.

Number of messages, 1870: Russia 2,716,300, Norway 466,700, Sweden 590,300, Denmark 513,623, Germany 8,207,800, Belgium 1,998,800, France 5,663,800, Switzerland 1,629,235, Spain 1,050,000, Italy 1,289,000, Austria 3,388,249, Hungary 1,489,000, United States 9,157,646, Great Britain and Ireland 9,650,000.

Number of messages, 1901: Russia 19,257,456, Norway 2,267,915, Sweden 2,749,483, Denmark 2,293,246, Germany 45,146,281, Belgium 14,322,560, France 50,486,435, Switzerland 3,272,345, Spain 5,131,496, Italy 11,178,282, Austria-Hungary 30,048,910, United States (in 1903) 91,300,000, Great Britain and Ireland (in 1902) 90,432,041.

## WIRELESS TELEGRAPHY.

It is over ten years ago since Marconi first announced his success in transmitting intelligence to a distance by means of wireless telegraphy, but it was not until the year 1902 that the successful issue of this system was witnessed. To-day, however, the Marconi system is not alone, for almost every civilized nation has developed one or more systems of wireless telegraphy. In the United States the De Forest and Fessenden systems are mostly in use in the wireless telegraph stations along the coasts, but the government employs no less than four different systems in its various departments—namely the Slaby-Arco, by the navy department; the Braun system, by the army for land operations; the Wildman system, by the signal corps of the army, and the Fessenden system, or modification of that system, by the weather bureau.

The apparatus required for the operation of this wireless telegraphy is a generator for setting up the electric oscillations in a vertical wire, or antenna as it is called, from which the electric waves are radiated into free space, together with a vertical wire at a receiving station, which intercepts and absorbs some of the electric waves, which are transformed into electric oscillations in that wire, where they are detected by a receiver of electric oscillations. The received oscillations are very weak as compared with the oscillations in the transmitting wire, but by employing very sensitive detectors of such oscillations, the signals transmitted may be received at a great distance from their source. The United States government is now seriously considering the advisability of obtaining, by congressional enactment or otherwise, the exclusive control of all wireless telegraph stations on the coasts of this country, on the ground that only in this way can the coast be properly defended in time of war, so far as wireless telegraphy may be useful to that end.

## *United States Postal Service*

### RURAL FREE DELIVERY.

The growth of rural free delivery in this country has been wonderfully rapid. At the beginning of the fiscal year 1899, there were less than 200 routes in operation, while now there are almost 25,000, bringing a daily mail service to more than 12,500,000 rural dwellers. This system is now established in 142 counties in the United States. It is proving a great factor in bringing the country people into closer touch with the outer world, among its advantages being that it advances general intelligence through the increased circulation of legitimate journals and periodicals, encourages a desire for letter writing, quickens business transactions, and so on.

For the benefit of people living in remote districts where the population is too scanty to justify the establishment of rural free delivery, the postoffice department has arranged for the delivery of mail into boxes along the lines of 20,000 star routes, aggregating 249,000 miles in length, and over 500,000 people are having their mail delivered to them by star route carriers in this way. All reports so far are to the effect that the service is proving satisfactory.

The appropriation made by Congress for the continuation and extension of rural free delivery service for the year ending June 30, 1904, was \$12,921,700.

### TELEPHONE SERVICE IN CONNECTION WITH FREE DELIVERY.

The extension of the rural free delivery service and the consequent increase in the use of the mails by the patrons residing along the rural routes, together with the extension of the telephone service into the farming districts of the country, has suggested the propriety of extending the privilege of the special delivery of such letters, or the contents thereof, by means of the telephone, it being proposed that a special stamp be provided covering the cost of such transmission, the use of which stamp would authorize the postmaster at the office of delivery to open such letter and telephone its contents to the person to whom it is addressed. It will be seen that if such plan is feasible, 24 hours' time will be saved in the transmission of important messages to many people residing along the lines of rural delivery routes.

## COST OF RURAL FREE DELIVERY SERVICE.

Year	Number of carriers	Cost of service in millions
1903 .....	15,119	\$8,011
1902 .....	8,466	3,993
1901 .....	4,301	1,749
1900 .....	1,276	420
1899 .....	391	149
1898 .....	148	49
1897 .....	44	—

## RURAL BOXES.

Patrons of the rural free delivery service are required to furnish at their own cost a box for the reception of their mail, complying with certain specifications as to size, shape and workmanship, and made of galvanized sheet iron or sheet steel, the same to be approved by the postoffice department. There are severe penalties for the depredation of approved boxes.

## THE DISCONTINUANCE OF STAR SERVICE.

The star service discontinued during the year ended June 30, 1903, by reason of the establishment of rural free delivery service, amounted to \$303,195.94. In some cases the postoffice department subsequently found it necessary to re-establish the star service, but the cost of service as re-established has not been deducted from the amount above named.

## POSTAL CHECKS.

The rapid extension of the rural free delivery service has increased the demand that the government shall provide some easy, convenient and safe method for the transmission of small sums of money through the mails, and the importance of passing some law which will insure the people this advantage is being urged upon congress. As the free delivery service has been extended, the number of letters carrying small sums of currency has greatly increased. At present there is no convenient method provided in the rural districts for making such remittances through the mails, except in currency or postage stamps, and such remittances are a constant temptation to those handling them. The post check or the coupon dollar shown herewith seems to be the simplest and safest means of obviating this evil.





## POSTOFFICES BY STATES AND KINDS.

[Fiscal year ending June 30, 1903.]

States and territories	Whole number of offices	Number of presidential offices	Money order offices	Total offices 4th class	Gross receipts, thousands
Alabama	2,550	55	683	2,495	\$1,054
Alaska	101	4	21	97	35
Arizona	257	21	89	236	219
Arkansas	2,037	60	500	1,977	887
California	1,658	152	847	1,506	3,852
Colorado	752	57	342	696	1,470
Connecticut	446	89	282	357	1,968
Delaware	132	15	57	117	224
District of Columbia	1	1	—	—	871
Florida	1,181	40	418	1,141	673
Georgia	2,474	80	671	2,394	1,719
Idaho	501	30	163	471	313
Illinois	2,347	314	1,159	2,033	13,696
Indiana	1,862	185	831	1,677	3,342
Indian Territory	668	39	166	629	373
Iowa	1,633	285	1,003	1,348	3,433
Kansas	1,475	161	764	1,314	1,980
Kentucky	3,269	77	607	3,192	1,812
Louisiana	1,314	43	366	1,271	1,220
Maine	1,166	72	455	1,094	1,320
Maryland	1,020	38	307	982	1,965
Massachusetts	790	177	432	613	7,542
Michigan	1,929	233	810	1,696	4,252
Minnesota	1,586	169	640	1,417	3,379
Mississippi	2,187	61	393	2,126	816
Missouri	2,813	170	1,192	2,643	6,071
Montana	546	33	169	513	514
Nebraska	1,002	126	491	876	1,788
Nevada	186	12	47	174	117
New Hampshire	527	54	248	473	713
New Jersey	875	125	403	750	3,367
New Mexico	387	14	109	373	198
New York	3,319	392	1,587	2,927	23,082
North Carolina	3,082	74	468	3,008	1,129
North Dakota	768	51	244	717	580
Ohio	2,920	261	1,265	2,659	7,764
Oklahoma	863	47	246	816	601
Oregon	870	42	334	828	789
Pennsylvania	4,912	360	2,379	4,552	11,665
Rhode Island	137	23	75	114	827
South Carolina	1,246	39	273	1,207	632
South Dakota	649	59	252	590	586
Tennessee	2,477	63	495	2,414	1,622

## POSTOFFICES BY STATES AND KINDS—Continued.

States and territories	Whole number of offices	Number of presidential offices	Money order offices	Total offices 4th class	Gross receipts thousands
Texas .....	3,313	197	1,087	3,116	2,865
Utah .....	330	17	126	313	413
Vermont .....	533	47	290	486	648
Virginia .....	3,722	72	764	3,650	1,763
Washington .....	945	56	363	889	1,170
West Virginia .....	2,230	58	356	2,172	980
Wisconsin .....	1,675	165	710	1,510	3,044
Wyoming .....	331	16	92	315	181
Hawaii .....	91	4	53	87	117
Porto Rico .....	81	4	28	77	91
Tutuila (Samoa).....	1	—	1	1	—
Guam .....	1	—	1	1	—
Midway Islands .....	1	—	—	1	—
Total .....	74,169	5,039	26,154	69,130	\$93,466

## STATISTICS OF THE POSTAL SERVICE.

[From the annual reports of the postmaster general.]

[In millions of dollars.]

Year ended June 30	Post-offices	Extent of post routes	Revenue of dep't	Expended for transportation of		Total expenditure
				Domestic mail	Foreign mail	
	Number	Miles		Thousands		
1903 .....	74,169	506,268	\$134	\$63	\$2,580	\$138
1902 .....	75,924	507,540	121	59	2,410	124
1901 .....	76,945	511,808	111	56	2,148	115
1900 .....	76,688	500,990	102	54	2,100	107
1899 .....	75,000	496,949	95	52	1,769	101
1898 .....	73,570	480,461	89	50	1,760	98
1897 .....	71,022	470,032	82	48	1,890	94
1896 .....	70,360	463,313	82	47	1,530	90
1895 .....	70,064	456,026	76	46	1,173	86
1894 .....	69,805	455,746	75	45	1,239	84
1893 .....	68,403	453,833	75	41	1,097	81
1892 .....	67,119	447,591	70	39	774	76
1891 .....	64,329	439,027	65	37	620	71
1890 .....	62,401	427,990	60	34	563	65
1889 .....	58,999	416,159	56	32	541	61
1888 .....	57,376	403,977	52	29	547	56
1887 .....	55,157	373,142	48	27	402	53
1886 .....	51,252	365,251	42	27	331	50
1880 .....	42,898	343,888	33	20	199	36
1876 .....	36,383	281,798	28	17	753	33

RECEIPTS AND EXPENDITURES OF POSTOFFICE SERVICE BY DECADES, AND FOR 1903 AND 1904.

[Receipts, expenditures, surplus and deficit, in thousands.]

Year	No. of offices	Receipts	Expenditures	Surplus	Deficit
1904	71,131	\$143,582	\$152,362	—	\$8,779
1903	74,169	134,224	138,784	—	4,560
1902	75,924	121,848	124,809	—	2,961
1892	67,119	70,930	76,980	—	6,050
1882	46,231	41,883	40,482	\$1,400	—
1872	31,863	21,915	26,658	—	4,742
1862	28,875	8,299	11,125	—	2,825
1852	20,901	6,925	7,108	—	182
1842	13,733	4,546	5,674	—	1,127
1832	9,205	2,258	2,266	—	7
1822	4,709	1,117	1,167	—	\$50
1812	2,610	649	540	109	—
1802	1,114	327	269	57	—
1792	195	67	54	12	—

ESTIMATES.

Postal revenue, year ending June 30, 1903	\$134,224,443.00
Add 9 per cent	12,080,199.87
Estimated revenue for 1904	146,304,642.87
Appropriation for 1904	153,511,549.75
Estimated deficit for 1904	7,206,906.88
Estimated revenue for 1904	\$146,304,642.87
Add 9 per cent	13,167,417.85
Estimated revenue for 1905	159,472,060.72
Estimated expenditures for 1905	168,085,770.00
Estimated deficit for 1905	8,613,709.28

ELECTRIC CAR SERVICE.

On June 30, 1903, there were in operation 379 electric and cable car routes, with a total length of 4283 miles, an annual travel of 8,585,950 miles, and costing \$46,216. The increase in length was 775 miles, in annual travel 1,051,193 miles, and in annual expenditure \$46,867.

MAIL TRANSPORTATION.

On June 30, 1903, the total number of domestic routes of all classes was 33,448; their length 506,268 miles, and the annual travel 493,193,359 miles. Compared with the preceding year this is a decrease in length of routes of 1272 miles, but an increase in annual travel of 18,958,671 miles. The expenditure for such service for the last fiscal year was \$63,594,542.34, an increase of \$4,312,664.81.

INTERNATIONAL MONEY ORDERS.

Special forms of application for foreign money orders will be furnished to persons who desire them.

The value of the British pound sterling in United States money is fixed by convention at \$4.87; the German mark at 24 cents gold; French and Swiss franc and Italian lire at 19.4 cents gold; Swedish and Norwegian kroner at 27 cents; Netherlands florin at 41 cents, Portuguese milreis at 80 cents.

International money orders are issued payable in Africa, Algeria, Arabia, Australia, Austria, Azores, Bahamas, Bermuda, British Bechuanaland, Borneo, British Guiana, British Honduras, Bulgaria, Canada, Cape Colony, Ceylon, Chili, China, Crete, Cuba, Cyprus, Danish West Indies, Denmark, Dutch East Indies, Egypt, Falkland Islands, Faroe Islands, Finland, France, Germany, Gibraltar, Great Britain and Ireland, Hawaiian Islands, Honduras, Hongkong, Hungary, Iceland, India, Italy, Jamaica, Japan, Java, Leeward Islands, Luxemburg, Madeira, Malacca, Malta, Mexico, Morocco, Netherlands, New South Wales, Newfoundland, New Zealand, North Borneo, Norway, Orange River Colony, Panama, Persia, Porto Rico, Portugal, Queensland, Rhodes, Roumania, Russia, St. Helena, Salvador, Servia, Siam, South Australia, Spice Islands, Straits Settlements, Sumatra, Sweden, Switzerland, Tasmania, Tobago, Transvaal, Trinidad, Tripoli, Tunis, Turkey, Victoria, Western Australia, West Indies, Windward Islands and Zanzibar.

Fees collected on international money orders:

Not exceeding \$10.....	\$.10	Not exceeding \$60.....	\$.60
Not exceeding \$20.....	.20	Not exceeding \$70.....	.70
Not exceeding \$30.....	.30	Not exceeding \$80.....	.80
Not exceeding \$40.....	.40	Not exceeding \$90.....	.90
Not exceeding \$50.....	.50	Not exceeding \$100.....	1.00

Rates of fees for Mexico, Costa Rica, Liberia, the Transvaal and Bolivia:

Orders for sums \$10 or less..	\$.08	Over \$50, not exceeding \$60..	\$.30
Over \$10, not exceeding \$20..	.10	Over \$60, not exceeding \$70..	.35
Over \$20, not exceeding \$30..	.15	Over \$70, not exceeding \$80..	.40
Over \$30, not exceeding \$40..	.20	Over \$80, not exceeding \$90..	.45
Over \$40, not exceeding \$50..	.25	Over \$90, not exceeding \$100.	.50

The maximum amount for which a single international money order may be drawn is, for orders payable in—

The United Kingdom of Great Britain and Ireland, Cape Colony and Jamaica (as heretofore) .....	£10 5s 4d=	\$50
New Zealand .....	£20 10s 8d=	100
Queensland .....	£20 10s 8d=	100
France, Algeria and Tunis.....	Francs 515=	100
Belgium .....	Francs 515=	100
Switzerland .....	Francs 515=	100
Italy .....	Lire or francs 515=	100
Portugal.....	Milreis 113.640 reis=	100
Netherlands.....	Florins 243.90 cents=	100
Germany .....	Marks 416.67=	100
Sweden .....	Kroner 370=	100
Norway .....	Kroner 370=	100
Denmark .....	Kroner 370=	100
Canada .....		100
Hawaiian (or Sandwich) Islands.....		100
Japan .....		100
Honduras .....		100
Newfoundland .....		100
New South Wales .....	£20 10s 8d=	100
Victoria .....	£20 10s 8d=	100
Tasmania .....	£20 10s 8d=	100
Windward Islands .....	£20 10s 8d=	100
Leeward Islands .....	£20 10s 8d=	100
Bahamas .....	£20 10s 8d=	100
The Colony of Trinidad and Tobago.....	£20 10s 8d=	100
Austria .....	Francs 515=	100
Hungary .....	Francs 515=	100
British Gulana .....	£10 5s 4d=	50
Bermuda .....	£10 5s 4d=	50
South Australia .....	£20 10s 8d=	100
Luxemburg, Grand Duchy of.....	Francs 515=	100
Salvador .....		100
Hongkong .....		100
Finland .....	Kroner 370=	100
Servia .....	Francs 515=	100
Egypt .....		100
Chili .....		100
British Honduras.....	£20 10s 8d=	100
Cuba .....		100
Porto Rico .....		100
Mexico .....		100
Russia .....	194 rubles 33 copeks=	100

## COST OF DOMESTIC MONEY ORDERS.

On orders not exceeding \$2.50.....	\$0.03
Over \$2.50 and not exceeding \$5.....	.05
Over \$5 and not exceeding \$10.....	.08
Over \$10 and not exceeding \$20.....	.10
Over \$20 and not exceeding \$30.....	.12
Over \$30 and not exceeding \$40.....	.15
Over \$40 and not exceeding \$50.....	.18
Over \$50 and not exceeding \$60.....	.20
Over \$60 and not exceeding \$75.....	.25
Over \$75 and not exceeding \$100.....	.30

## RATES OF POSTAGE.

**First-Class Matter**—Letters, matter wholly or partly in writing, drawings and plans containing written words, letters or descriptive figures, and matter which is sealed against inspection, are first-class matter, and subject to the postage rate of 2 cents for each ounce or fraction thereof. This rate applies also to letters for Canada, Mexico, Porto Rico, Guam and the Philippine Islands.

On local or drop letters, 2 cents for each ounce or fraction thereof; where there is no carrier system, 1 cent an ounce.

Postal cards having anything attached except a label of address, or having writing or printing on the face other than the address, are subject to letter rates of postage.

**Second-Class Matter**—Embraces "all newspapers and other periodical publications which are issued at stated intervals and as frequently as four times a year, originated and published for the dissemination of information of a public character, or devoted to literature, the sciences, arts or some special industry, and which have a legitimate list of subscribers, provided, however, that nothing herein contained shall be so construed as to admit to the second-class rate regular publications, designed primarily for advertising purposes or free circulation, or for circulation at nominal rates." On newspapers and periodical publications of the second class, when sent by others than the publisher or news agent, the postage shall be prepaid at the rate of one cent for each four ounces of fractional part thereof.

**Third-Class Matter**—Embraces books, circulars, photographs, printed labels, proof sheets, corrected proof sheets with manuscript copy accompanying the same, seeds, cuttings, roots, scions and plants; and postage shall be paid thereon at the rate of 1 cent for each two ounces or fractional part thereof.

**Fourth-Class Matter**—Embraces blank address tags or labels, patterns, playing cards, visiting cards, ornamented paper, envelopes plain or printed, paper bags plain or printed, and samples of merchandise, models, samples of ores, metals, minerals, cut flowers, or any other matter not included in the first, sec-

ond or third classes, and which is not liable to destroy or otherwise damage the contents of the mail bag. Postage rate thereon, 1 cent for each ounce or fractional part thereof.

The act regulating second-class matter was passed March 3, 1879, and remained legally unchanged until March, 1900, when it was decided that "the legitimate list of subscribers prescribed by law must approximate 50 per cent of the number of copies regularly issued and circulated by mail or otherwise." The phrase "periodical publications" is now ruled to include "only those which consist of current news or miscellaneous literature matter or both, not excluding advertising." Another ruling of interest is that interpreting the phrase "for the dissemination of information of a public character" as barring local religious publications. Among the various phases of the mailing problem now under consideration are: The attempt to stop the practice of subscribing in bulk for publications, the admittance of sample copies at the same rate as those subscribed for, and the "recommendation of a rate of 4 cents a pound for all publications excepting dailies, weeklies, semi-weeklies and tri-weeklies."

## *The Parcels Post*

### HOW THE EXPRESS COMPANIES AND THE POSTOFFICE IMPOSE A HIGH TAX UPON THE TRANSPORTATION OF PACKAGES—A SIMPLE REMEDY IN THE PARCELS POST.

From the cradle to the grave, every individual in America is constantly, insidiously and unjustly taxed, by reason of the extortionate charges for transporting merchandise packages by either express or mail. The abuse is one of the rankest to which the public submits.

No consideration exists which justifies a longer continuance of this evil. On the contrary, the time is ripe for the introduction of a parcels post that shall make easy and cheap the transportation of large or small parcels between the people of this country.

The parcels post long since became indispensable in Great Britain and most European countries, at rates from 25 to 95 per cent less than the postage or express charges in the United States. It is absolutely certain that the parcels post could be introduced here on a basis that would be self-sustaining.

Already the postoffice carries each year 2000 million parcels of magazines and newspapers at 1 cent per pound, the limit of weight being a 220-pound mail sack.

Over 100 million parcels of magazines and newspapers are mailed by the general public annually at 4 cents per pound, and



nearly 1000 million parcels of books are posted yearly at 8 cents per pound, the weight limit in these two cases being four pounds per package.

Over 300 million parcels of magazines and local newspapers are carried post free each year within the county of publication.

But of general merchandise, only about 75 million parcels are carried in the mails yearly, because the rate is 16 cents per pound, and the weight of a single package cannot exceed four pounds.

The total number of parcels carried in the mails each year now probably exceeds 4000 millions in number, and 250,000 tons in weight. This greatly exceeds both in number of pieces and weight, the letter post.

The public want the merchandise rate of postage reduced to 1 cent for three ounces, 5 cents for one pound, and 25 cents for 11 pounds.

Express companies are fighting this reform tooth and nail, because they say it would transfer much of their business to the mails.

The express companies also oppose the public demand for a suitable postal currency, to supersede the present inconvenient and costly postal money order service. The latter seems to be cleverly designed to compel people to send money by express orders. It is a notorious fact that the express companies thus obtain the use of millions of capital, not only free of cost except for transportation, but are actually paid for handling the money. It is as though a depositor not only received no interest on his money in the bank, but actually paid the bank 1 or 2 per cent per annum on his deposit for having the use of his money!

The express companies compete with the postoffice in every possible way. They transport and deliver certain parcels at a fraction less than the postage rate.

But the express companies in Great Britain and Europe compete profitably even with the low rates on parcels post which prevail in those countries. In Germany, parcels are carried all distances at a total cost of only 12 cents for an 11-pound package, while parcels up to 110 pounds in weight may be posted at a proportional reduction per pound. In Switzerland the rates are much less.

In the United States the postage on merchandise averages about 16 times as much as the rate in Germany. For instance, it costs 64 cents to mail four pounds in the United States, while in Germany 110 pounds may be mailed for only 60 cents.

There is a library post in Germany and Switzerland by which, at a cost of only 3 cents for four pounds, you can have any book you want mailed to you from the public library and carried back from your home to the library, the 3 cents covering postage both ways.

In the United States the rate is 16 cents per pound each way, making four pounds of library books cost \$1.28 for the

round trip from home to library and back. The library post is therefore three times as expensive here as abroad.

The free delivery of letters and papers has been a great convenience to farmers, so much so that this year congress appropriated \$20,000,000 for this service, whereas only a few years ago it utterly refused to even authorize the experiment of rural free delivery.

But the farmer is still compelled to hitch up his team and go to the postoffice every time he wants to receive a package of merchandise or mail a pound of produce.

Not only that, but the rate of postage is so high as to make the mails practically prohibitive for his business. The farmer, like other people, therefore, has to pay the express companies their robber tariff.

Yet the rural mail carrier is going right by every farmhouse every day. Here is an agency by which, were the rates reasonable, farmers could ship their produce fresh every day direct to consumers, and in return could have any kind of merchandise they want delivered at the farmer's door.

If the postage on parcels post were reduced to say 1 cent for three ounces, 5 cents for one pound, and 25 cents for 11 pounds, the service would doubtless be self-sustaining. And there would be business enough left for the express companies to earn a reasonable dividend on their actual investment. But Uncle Sam would better buy out the express companies, at the present market quotation, rather than delay making lower rates on the parcels post.

Of course the express lobby at Washington is, at first sight, a hard one to overcome, since Thomas C. Platt, United States senator from New York, is president of the United States express company.

Yet a grand, overwhelming demand for parcels post, unanimously voiced and insisted upon by the great public, will compel favorable action by congress, just as it compelled favorable action for rural free delivery.

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It's a shame the way the express companies tax the public through excessive rates on small parcels. This is due to the high postage on merchandise. Here in America the postage is 16 cents per pound on merchandise and package must not exceed four pounds in weight. In Switzerland, the rate is only 3 cents per pound up to 11 pounds, and in Germany 6 cents, with 11 pounds limit.

During the fiscal year 1904 there were received by the United States 54,078 parcels, with a total weight of 192,396 pounds. Compared with the previous year this shows a decrease in the number of parcels of 20,072 and a decrease in weight of 276,449 pounds. Parcels post conventions have recently been completed with Hongkong, Japan and Norway. Each of these conventions restricts the value of any parcel to \$50 and its weight to 4 pounds 6 ounces, which restrictions now apply also to parcels exchanged between this country and Germany.

## PARCELS POST REGULATIONS.

In Bolivia, Chile, Guatemala, British Guiana, Honduras, British Honduras, Nicaragua, Salvador and Venezuela, the greatest length allowable for a package is 3 feet 6 inches, and the greatest length and girth combined 6 feet; in Colombia, Costa Rica and Mexico, the greatest length is 2 feet and the greatest girth 4 feet. The greatest weight allowable is 11 pounds in all of the countries. The postage for a parcel not exceeding one pound is 12 cents, and 12 cents for every additional pound or fraction of a pound, in all of the above mentioned countries except Bolivia and Chile, where 20 cents is charged for a parcel not exceeding one pound, and 20 cents for every additional pound or fraction of a pound. The exchange post-offices, which may dispatch and receive parcels post mail are shown in the following table:

Countries	Exchange postoffices	
	United States	Latin America
Bolivia .....	New York and San Francisco.	La Paz.
Chile .....	New York and San Francisco	Valparaiso.
Colombia .....	All offices authorized to exchange mails between the two countries.	
Costa Rica .....		
Guatemala .....	New York, New Orleans and San Francisco.	Guatemala City, Retalhuleu and Puerto Barrios.
Guiana, British.....	All offices authorized to exchange mails.	
Honduras .....	New York, New Orleans and San Francisco.	Tegucigalpa, Puerto Cortez, Amapala and Trujillo.
Honduras, British..	New Orleans.	Belize.
Mexico .....	All offices authorized to exchange mails.	
Nicaragua .....	New York, New Orleans and San Francisco.	Bluefields, San Juan del Norte and Corinto.
Salvador .....	New York and San Francisco.	San Salvador.
Venezuela .....	All offices authorized to exchange mails.	

## ***Education***

### SUCCESS OF CONSOLIDATION OF SCHOOLS.

There are now 20 states where the plan of uniting several small ungraded schools into a single large graded one is in operation in the rural towns to a greater or less extent. Consolidation has proved a success in every case, and has been found less expensive than the district schools, even after paying for the transportation of the children living at a distance. In Massachusetts, over 65 per cent of the townships have been consolidated in whole or in part. Consolidation exists largely in Massachusetts, Connecticut, New Hampshire, Vermont, Ohio, Indiana, Iowa and Kansas, and to some extent in Maine, Rhode Island, New York, Pennsylvania, Wisconsin, Minnesota, North Dakota, South Dakota, Nebraska, Missouri, Louisiana and Florida. The following will show the comparative cost of the two plans:

#### DISTRICT PLAN.

Salaries for seven teachers for seven months.....	\$2492.00
Institute fee for seven institutes.....	124.60
Fuel for seven rooms at \$30 per room.....	210.00
Supplies for seven rooms at \$10 per room.....	70.00
Repairs at \$20 per room.....	140.00
Total .....	\$3036.60

#### CONSOLIDATION PLAN.

Salaries for four teachers for seven months.....	\$1442.00
Institute fee for seven institutes.....	72.10
Fuel for four rooms at \$30 per room.....	120.00
Supplies for four rooms at \$10 per room.....	40.00
Repairs at \$20 per room.....	80.00
Total .....	\$1754.10
Transportation at \$8.87 per day.....	\$1225.00
Difference in favor of consolidation .....	57.50
	\$3036.60

#### AGRICULTURAL HIGH SCHOOLS.

Agricultural high schools between the country school and the college of agriculture have proved successful and very practical in Minnesota, Nebraska and North Dakota. They are more practical for country young people than are city high schools

for city youth, and other states, as Maine, Alabama and Wisconsin, are starting them.

Large agricultural high schools, in which each student has the advantages of a large equipment of laboratories, improved live stock, etc., and of a strong faculty of specialists, and to which come students from consolidated rural schools prepared in the academic studies, can provide the technical training in agriculture and country home making in the shortest practicable time, at the least expense to the state and pupil, and in the very best way.

A state agricultural college, supplied with graduates of agricultural high schools, would be able to give advanced work that would turn out teachers, experimenters and specialists in farming of a high order. This system would provide experiment farms, demonstration farms and model farms. Each state would have its central experiment station farm at the agricultural college, and a branch station farm at each agricultural high school. These would serve for purposes of instruction as well as for experimental work. At each consolidated rural school a miniature farm of 10 acres would serve to demonstrate many of the things wrought out by experiment stations and many practical details of farm work.

#### STATISTICS OF SCHOOL SYSTEMS.

	Estimate of popula- tion in 1902	No. children of school age		
		Boys	Girls	Total
United States .....	78,544,816	11,217,401	11,044,462	22,261,863
North Atlantic division...	21,802,750	2,666,035	2,633,755	5,329,790
South Atlantic division...	10,696,435	1,711,395	1,689,728	3,401,123
South central division....	14,715,700	2,445,342	2,383,097	4,828,439
North central division....	26,912,400	3,833,806	3,760,164	7,593,970
Western division .....	4,417,531	560,823	547,718	1,108,541

#### NUMBER OF PUPILS OF ALL AGES ENROLLED IN SCHOOLS IN 1902.

	Boys	Girls	Per cent of school popu- lation en- rolled, '02	
			Total	rolled, '02
United States .....	8,609,418	7,916,469	15,925,887	71.54
North Atlantic division.	1,872,442	1,861,241	3,733,683	70.05
South Atlantic division.	1,120,271	1,159,019	2,279,290	67.02
South central division.	1,584,924	1,571,666	3,156,590	65.37
North central division.	2,968,396	2,898,000	5,866,396	77.25
Western division .....	463,385	426,543	890,928	80.23

## AVERAGE MONTHLY SALARY OF TEACHERS.

	Male	Female
United States .....	\$49.05	\$39.77
North Atlantic division.....	59.01	40.17
South Atlantic division.....	30.50	28.60
South central division.....	44.28	36.88
North central division.....	50.85	39.60
Western division .....	65.90	53.73

## WHOLE NUMBER OF TEACHERS EMPLOYED IN SCHOOLS.

	Male	Female	Total
United States .....	122,392	317,204	439,596
North Atlantic division.....	18,069	90,003	108,072
South Atlantic division .....	19,567	31,818	51,385
South central division .....	30,652	34,848	65,500
North central division.....	48,152	139,691	187,843
Western division .....	5,952	20,844	26,796

## SCHOOL EXPENDITURE.

	Total amount expended for schools in round millions		Per capita of population	
	1889-90	1901-2	1889-90	1901-2
United States .....	\$140	\$235	\$2.24	\$2.99
North Atlantic division.....	48	91	2.76	4.18
South Atlantic division.....	8	14	.99	1.32
South central division.....	10	16	.97	1.14
North central division.....	63	93	2.81	3.48
Western division .....	10	19	3.37	4.39

## AVERAGE NUMBER DAYS SCHOOLS WERE KEPT.

	1889-90	1901-2	Avg. no. days attended by each pupil en- rolled in 1901-2
United States .....	134.7	145.0	100.1
North Atlantic division.....	66.6	177.3	130.2
South Atlantic division.....	99.9	115.8	73.4
South central division .....	88.2	100.6	66.9
North central division .....	148.0	156.5	100.4
Western division .....	135.0	143.9	99.2

## PUPILS IN SPECIAL SCHOOLS, 1901-2.

[Report of Commissioner of Education.]

City evening schools, estimated .....	207,162
Business schools .....	137,247
Schools for defectives .....	28,827
Reform schools .....	35,247
Government Indian schools .....	24,120
Indian schools (five civilized tribes).....	13,864
Schools in Alaska .....	3,441
Orphan asylums .....	15,000
Private kindergartens .....	105,932
Miscellaneous .....	50,000
	<hr/>
	620,840
Schools and colleges, public and private.....	17,460,000
	<hr/>
	18,080,840

## NORMAL SCHOOLS.

The first training school for teachers was opened in Stettin, Prussia, in 1735. The first one in the United States was at Lexington, Mass. (now moved to Framingham, Mass.), in 1839. Now every state and territory, excepting Wyoming and Nevada, where teachers are educated in the state colleges, has at least one normal school. There are in the United States (1901-2) 173 public and 109 private normal schools, with a total of 3277 instructors, 65,068 students and 10,005 graduates.

## PUBLIC NORMAL SCHOOLS.

Alabama—Florence, Jacksonville, Livingston, Montgomery, Normal (colored), Troy.  
 Arizona—Tempe.  
 Arkansas—Pine Bluff.  
 California—Chico, Los Angeles, San Diego, San Jose.  
 Colorado—Greeley.  
 Connecticut—Bridgeport, New Britain, New Haven, Willimantic.  
 Delaware—Wilmington.  
 District of Columbia—Washington.  
 Florida—De Funiak Springs, Tallahassee.  
 Georgia—Athens, Milledgeville.  
 Idaho—Albion, Lewiston.  
 Illinois—Carbondale, Chicago, Station O, Normal.  
 Indiana—Indianapolis, Terre Haute.  
 Iowa—Boonesboro, Cedar Falls, Dexter, Rockwell City, Woodbine.  
 Kansas—Emporia.

- Kentucky—Corinth, Frankfort (colored), Hazard, Louisville, Magnolia, Temple Hill, Upton.
- Louisiana—Natchitoches, New Orleans.
- Maine—Castine, Farmington, Fort Kent, Gorham.
- Maryland—Baltimore (Maryland State Normal School; Baltimore Normal School for Education of Colored Teachers).
- Massachusetts—Boston (Boston Normal School; Massachusetts Normal Art School), Bridgewater, Cambridge, Fitchburg, Framingham, Lowell, North Adams, Salem, Westfield, Worcester.
- Michigan—Detroit, Mount Pleasant, Ypsilanti.
- Minnesota—Mankato, Moorhead, St. Cloud, St. Paul, Winona.
- Mississippi—Abbeville, Holly Springs (Holly Springs Normal Institute; Mississippi State Normal School), Paris, Sherman, Troy, Walnut Grove.
- Missouri—Cape Girardeau, Kirksville, St. Louis, Warrensburg.
- Montana—Dillon.
- Nebraska—Peru.
- New Hampshire—Plymouth.
- New Jersey—Newark, Paterson, Trenton.
- New Mexico—Silver City.
- New York—Albany, Brockport, Brooklyn, Buffalo, Cortland, Fredonia, Geneseo, Jamaica, New Paltz, New York, Oneonta, Oswego, Plattsburg, Potsdam, Syracuse.
- North Carolina—Elizabeth City (colored), Fayetteville (colored), Franklinton, Goldsboro, Greensboro, Plymouth, Salisbury.
- North Dakota—Mayville, Valley City.
- Ohio—Cincinnati, Cleveland, Columbus, Dayton, Geneva, Wadsworth.
- Oklahoma—Edmond.
- Oregon—Ashland, Drain, Monmouth, Weston.
- Pennsylvania—Bloomsburg, California, Clarion, East Stroudsburg, Edinboro, Indiana, Kutztown, Lockhaven, Mansfield, Millersville, Philadelphia, Pittsburg, Shippensburg, Slippery Rock, West Chester.
- Rhode Island—Providence.
- South Carolina—Rockhill.
- South Dakota—Madison, Spearfish, Springfield.
- Tennessee—Nashville.
- Texas—Detroit, Huntsville, Timpson.
- Utah—Cedar City, Salt Lake City.
- Vermont—Castleton, Johnson, Randolph.
- Virginia—Farmville, Hampton, Petersburg.
- Washington—Cheney, Ellensburg.
- West Virginia—Athens, Fairmont, Glenville, Huntington, Institute (colored), Shepherdstown, West Liberty.
- Wisconsin—Milwaukee, Oshkosh, Plattsville, River Falls, Stephens Point, West Superior, Whitewater.



**SCHOOLS FOR MANUAL TRAINING.**

There were in 1901-2, 163 schools devoted chiefly to manual training, with nearly 50,000 pupils; 39 of these schools were for Indian children. Besides these special schools, 270 public schools in 1901-2 gave manual instruction to the pupils. This work began in 1890 in 37 cities, and has steadily increased until the last report shows 270 cities giving this training.

**SCHOOLS IN ALASKA.**

In 1901-2 there were in Alaska 27 schools, with 33 teachers, and a total of 1791 pupils. Four of these schools were for white pupils, three for both white and native, and the rest for natives, including Eskimos, Aleuts and Indians. Fifty Alaskan children were also attending the Carlisle Indian school, most of them doing well in all ways. Missions of 11 denominations have schools in connection with their religious work.

**SCHOOLS FOR THE DEFECTIVE CLASSES.**

There are reported 39 schools for the blind, with 487 instructors and 4315 pupils. There are 105,804 books in the libraries of these schools, and in the year 1901-2 \$77,877 was expended for buildings and improvements, and \$1,072,512 for support.

In 121 schools for the deaf are 1,315 teachers and 11,938 pupils. The sum of \$467,124 was expended for buildings and \$2,189,677 for salaries and support. Of these institutions, 57 are state, 49 public day schools, and 15 private.

There are 20 state and 12 private schools for the feeble-minded, with 339 teachers, 801 assistants and 12,579 pupils.

**STATE INSTITUTIONS FOR THE BLIND.**

Alabama—Talladega, Alabama Academy for the Blind.

Arkansas—Little Rock, Arkansas School for the Blind.

California—Berkeley, California Institution for the Deaf and Blind.

Colorado—Colorado Springs, Colorado School for the Deaf and Blind.

Florida—St. Augustine, State Institute for the Deaf and Blind.

Georgia—Macon, Georgia Academy for the Blind.

Illinois—Jacksonville, Illinois Institution for the Education of the Blind.

Indiana—Indianapolis, Indiana Institution for the Education of the Blind.

Iowa—Vinton, Iowa College for the Blind.

Kansas—Kansas City, State Institution for the Education of the Blind.

- Kentucky—Louisville, Kentucky Institution for the Education of the Blind.
- Louisiana—Baton Rouge, State Institution for the Education of the Blind.
- Maryland—Baltimore, Maryland School for Colored Blind and Deaf; Maryland School for the Blind.
- Massachusetts—South Boston, Perkins Institute and Massachusetts School for Blind.
- Michigan—Lansing, Michigan School for Blind.
- Minnesota—Faribault, Minnesota School for Blind.
- Mississippi—Jackson, Institution for the Blind of Mississippi.
- Missouri—St. Louis, Missouri School for Blind.
- Montana—Boulder, Montana Deaf and Dumb Asylum.
- Nebraska—Nebraska City, Nebraska Institute for the Blind.
- New York—Batavia, New York State School for the Blind.  
New York, New York Institution for the Blind.
- North Carolina—Raleigh, North Carolina Institution for the Education of the Deaf and Dumb and Blind.
- Ohio—Columbus, Ohio Institution for the Blind.
- Oregon—Salem, Oregon School for the Blind.
- Pennsylvania—Philadelphia, Pennsylvania Institution for the Instruction of the Blind.  
Pittsburg, Western Pennsylvania Institution for the Blind.
- South Carolina—Cedar Springs, South Carolina Institution for the Education of the Deaf and Blind.
- Tennessee—Nashville, Tennessee School for Blind.
- Texas—Austin, Deaf, Dumb and Blind Institute for Colored Youth; Texas Institution for the Blind.
- Virginia—Staunton, Virginia Institution for the Deaf and Dumb and the Blind.
- Washington—Vancouver, Washington School for Defective Youth.
- West Virginia—Romney, West Virginia Schools for the Deaf and Blind.
- Wisconsin—Janesville, Wisconsin School for the Blind.

#### STATE INSTITUTIONS FOR THE DEAF.

- Alabama—Talladega, Alabama Institute for the Deaf.
- Arkansas—Little Rock, Arkansas Deaf Mute Institute.
- California—Berkeley, California Institution for the Education of the Deaf and the Blind.
- Colorado—Colorado Springs, Colorado School for the Deaf and Blind.
- Connecticut—Hartford, American School for the Deaf.  
Mystic, Mystic Oral School for the Deaf.
- District of Columbia—Washington, the Columbia Institution for the Deaf; Gallaudet College; Kendall School.
- Florida—St. Augustine, State Institution for the Deaf and the Blind.
- Georgia—Cave Spring, Georgia School for the Deaf.

- Illinois—Jacksonville, Illinois Institution for the Education of the Deaf and Dumb.
- Indiana—Indianapolis, Indiana Institution for the Education of the Deaf.
- Iowa—Council Bluffs, Iowa School for the Deaf.
- Kansas—Olathe, Kansas Institution for the Deaf and Dumb.
- Kentucky—Danville, Kentucky Institution for the Education of Deaf Mutes.
- Louisiana—Baton Rouge, Louisiana Institution for the Deaf and Dumb.
- Maine—Portland, Maine School for the Deaf.
- Maryland—Baltimore, Maryland School for the Colored Blind and Deaf.  
Frederick, Maryland School for the Deaf and Dumb.
- Massachusetts—Beverly, New England Industrial School for Deaf Mutes.
- Northampton, Clarke School for the Deaf.
- Michigan—Flint, Michigan School for the Deaf.
- Minnesota—Faribault, Minnesota School for the Deaf.
- Mississippi—Jackson Institution for the Education of the Deaf and Dumb.
- Missouri—Fulton, Missouri School for the Deaf.
- Montana—Boulder, Montana Deaf and Dumb Asylum.
- Nebraska—Omaha, Institution for the Deaf and Dumb.
- New Jersey—Trenton, New Jersey School for Deaf Mutes.
- New Mexico—Santa Fe, New Mexico School for the Deaf and the Blind.
- New York—Albany, Albany Home School for the Oral Instruction of the Deaf.  
Fordham, St. Joseph's Institute for the Improved Instruction of Deaf Mutes.  
Malone, Northern New York Institution for Deaf Mutes.  
New York (904 Lexington avenue), Institution for the Improved Instruction of Deaf Mutes; (Station M), New York Institution for the Instruction of the Deaf and Dumb.  
Rochester, Western New York Institution for Deaf Mutes.  
Rome, Central New York Institution for Deaf Mutes.
- North Carolina—Morgantown, North Carolina School for the Deaf and Dumb.  
Raleigh, North Carolina Institution for the Deaf, Dumb and Blind.
- North Dakota—Devil's Lake, Deaf and Dumb Asylum.
- Ohio—Columbus, Ohio Institution for the Education of the Deaf and Dumb.
- Oklahoma—Guthrie, Oklahoma Institute for the Deaf.
- Oregon—Salem, Oregon School for Deaf Mutes.
- Pennsylvania—Edgewood Park, Western Pennsylvania Institution for the Deaf and Dumb.  
Philadelphia, Home for the training in speech of deaf children before they are of school age.  
Mount Airy, Philadelphia, Pennsylvania Institution for the Deaf and Dumb.

Scranton, Pennsylvania Oral School for the Deaf.  
 Rhode Island—Providence, Rhode Island Institute for the Deaf.  
 South Carolina—Cedar Springs, South Carolina Institution for  
 the Education of the Deaf and the Blind.  
 South Dakota—Sioux Falls, South Dakota School for Deaf  
 Mutes.  
 Tennessee—Knoxville, Tennessee Deaf and Dumb School.  
 Texas—Austin, Deaf, Dumb and Blind Institute for Colored  
 Children; Texas School for the Deaf.  
 Utah—Ogden, Utah State School for the Deaf and Dumb.  
 Virginia—Staunton, Virginia Institution for the Deaf and Blind.  
 Washington—Vancouver, Washington School for Defective  
 Youth.  
 West Virginia—Romney, West Virginia Schools for the Deaf and  
 Blind.  
 Wisconsin—Delavan, Wisconsin School for the Deaf

#### STATE INSTITUTIONS FOR THE FEEBLE-MINDED.

California—Eldridge, California Home for the Care and Training  
 of Feeble-Minded Children.  
 Illinois—Lincoln, Illinois Asylum for Feeble-Minded Children.  
 Indiana—Fort Wayne, Indiana School for Feeble-Minded Youth.  
 Iowa—Glenwood, Iowa Institution for Feeble-Minded Children.  
 Kansas—Winfield, Kansas State Asylum for Idiotic and Imbe-  
 cille Youth.  
 Kentucky—Frankfort, Institution for the Education and Train-  
 ing of Feeble-Minded Children.  
 Massachusetts—Waverly, Massachusetts School for the Feeble-  
 Minded.  
 Michigan—Lapeer, Michigan Home for the Feeble-Minded and  
 Epileptic.  
 Minnesota—Faribault, Minnesota School for the Feeble-Minded.  
 Nebraska—Beatrice, Nebraska Institution for Feeble-Minded  
 Youth.  
 New Jersey—Vineland, New Jersey Training School for Feeble-  
 Minded Children; New Jersey Institution for Feeble-Minded  
 Women.  
 New York—Newark, New York Custodial Asylum for Feeble-  
 Minded Women.  
 New York, School for Feeble-Minded.  
 Syracuse, Syracuse State Institution for Feeble-Minded  
 Children.  
 Ohio—Columbus, Ohio Institution for the Education of Feeble-  
 Minded Youth.  
 Pennsylvania—Elwyn, Pennsylvania Training School for Feeble-  
 Minded Children.  
 Washington—Vancouver, Washington School for Defective  
 Youth.  
 Wisconsin—Chippewa Falls, Wisconsin Home for Feeble-Minded.

## SCHOOLS OF MUSIC.

- New York City—Grand Conservatory of Music, 250 West 23d street. James F. Neill, recording secretary.  
 Metropolitan College of Music, 21 East 14th street. John G. Griggs, secretary.  
 National Dramatic Conservatory, 23 West 44th street. T. Francis Brien, secretary.  
 New York College of Music, 128 East 58th street.  
 New York Conservatory of Music, 112 East 18th street. Etta F. Hull, secretary.  
 New York German Conservatory of Music, 37 West 42d street.  
 New York Institute for Violin Playing and School for Piano and Vocal Culture, 230 East 62d street.
- Boston, Mass.—New England Conservatory of Music.  
 Faelten Pianoforte School, 162 Boylston street.  
 Virgil Clavier School.
- Chicago, Ill.—Chicago Musical College, 202 Michigan avenue.  
 Chicago Auditorium Conservatory, Auditorium building. Roy Arthur Hunt, Manager.  
 Chicago Piano College, 421 and 243 Wabash avenue.
- Cincinnati, O.—Cincinnati Conservatory of Music, Highland avenue, Burnet avenue and Oak street.  
 College of Music of Cincinnati.

## SCHOOLS OF ART.

- New York City—New York School of Applied Design for Women, 200 West 23d street. Miss Harriet Z. Blackford, secretary.  
 School of Industrial Art and Technical Design for Women, 159 West 23d street. Henry D. Crisp, secretary.  
 New York School of Art, 57th street.  
 Woman's Art School, Cooper Union. Miss Mary A. Vinton, president.  
 Art Students' League, 215 West 57th street, Elna de Mier, secretary.  
 National Academy of Design, 53 East 23d street.
- Boston, Mass.—Massachusetts Normal Art School, Exeter street, corner Newbury street.  
 Museum of Fine Arts, Dartmouth street, corner St. James avenue.  
 South Boston School of Art, junction of Emerson and East Fourth streets.  
 Cowles Art School, 221 Columbus avenue.
- Chicago, Ill.—School of Illustrating and Designing (School of Black and White), 115-116 Auditorium building.  
 Art Institute School of Art.  
 School of Elementary Art Instruction, 730 and 203 Michigan avenue.  
 School of Illustration, 26 East Van Buren street.

- Art Students' League, Art Institute.  
 School of Progressive Art, 42 Auditorium building.  
 St. Louis, Mo.—School of Fine Arts, Locust street, near corner  
 19th street. H. C. Ives, director.  
 San Francisco, Cal.—School of Design, in connection with the  
 San Francisco Art Association, Mark Hopkins Institute  
 of Art.  
 Philadelphia, Pa.—Drexel Institute of Art, Science and Industry,  
 Chestnut street.  
 Philadelphia School of Design for Women, North Broad and  
 Water streets.  
 Cincinnati, O.—Art School of the Cincinnati Museum Association,  
 Eden Park.  
 Denver, Col.—Students' School of Art, 1517 Tremont street.

#### SCHOOLS OF DOMESTIC SCIENCE.

[And Institutions Which Have Courses in Domestic Science  
 and Cookery.]

- Alabama—Auburn, Agricultural College Normal School for Col-  
 ored Pupils.  
 Arizona—Tucson, University of Arizona.  
 California—Oakland, School of Training for Domestics.  
 Palo Alto, Leland Stanford, Junior, University.  
 Colorado—Fort Collins, State Agricultural College.  
 Greeley, State Normal School.  
 Connecticut—Bridgeport, Telegram-Union Cooking School.  
 Middletown, Summer School of Chemistry and Biology at Wes-  
 leyian University.  
 New Haven, Boardman School.  
 Storrs, Connecticut Agricultural College.  
 Waterbury, the Young Women's Friendly League.  
 Florida—Tallahassee, State Normal and Industrial College.  
 Georgia—Athens, State Normal School.  
 Atlanta, Atlanta University.  
 Milledgeville, Georgia Normal and Industrial College.  
 South Atlanta, Clark University for Colored Students.  
 Illinois—Carthage, Carthage College.  
 Chicago, Domestic Science Training School, 53 Dearborn street;  
 School of Domestic Science and Arts, 147-153 Fifth avenue;  
 University of Chicago.  
 Decatur, James Milliken University.  
 Evanston, School of Domestic Science.  
 Urbana, State University.  
 Indiana—Lafayette, Purdue University.  
 Iowa—Ames, Iowa State College.  
 Kansas—Manhattan, State Agricultural College.  
 Kentucky—Berea, Berea College.  
 Frankfort, State Normal School for Colored Students.

- Louisiana—New Orleans, Southern University.  
Ruston, Louisiana Industrial Institute.
- Maine—Lewiston, Bates College.
- Massachusetts—Auburndale, Lasell Seminary.  
Boston, Boston Cooking School, Boylston street; Miss Farmer's Cooking School, 30 Huntington avenue; Simmons College;  
Y. W. C. A. School of Domestic Science.  
Cambridgeport, Y. W. C. A. School.  
Northfield, Northfield Seminary.  
Northampton, Smith College.  
South Framingham, State Normal School.
- Michigan—Agricultural College, State Agricultural College.
- Minnesota—St. Anthony Park, University of Minnesota.
- Missouri—Columbia, University of Missouri.  
Jefferson City, Lincoln Institute.  
St. Louis, Women's Training School, 1728 Locust street.
- Montana—Bozeman, State College of Agriculture and Mechanic Arts.
- Nebraska—Lincoln, University of Nebraska.
- New Hampshire—Exeter, Robinson Female Seminary.
- Nevada—Reno, State University.
- New Mexico—Mesilla Park, State University.
- New York—Brooklyn, Adelphi College; Pratt Institute.  
Buffalo, Women's Educational and Industrial Union.  
Chautauqua, School of Domestic Science.  
New Brighton, S. J., McKinley Domestic Training School for Colored Students.  
New York, Teachers' College of Columbia University; New York Cooking School, Fourth avenue, corner 22d street;  
Greater New York Cooking School, 2 East 42d street.  
Niagara Falls, Oread Institute.  
Potsdam, Thomas H. Clarkson School of Technology.  
Rochester, Mechanics' Institute.  
Syracuse, Classical School.
- North Carolina—Asheville, Home Industrial School.  
Concord, Scotia Seminary for Colored Girls.  
Greensboro, Agricultural and Mechanical College for Colored Students.  
Raleigh, Shaw University for Colored Students.
- North Dakota—Agricultural College, State Agricultural College.
- Ohio—Columbus, State University.  
Painesville, Lake Erie College.  
Toledo, Toledo Polytechnic School.  
Xenia, Ohio Soldiers' and Sailors' Orphans' Home.
- Oklahoma—Stillwater, Agricultural and Mechanical College.
- Oregon—Corvallis, State Agricultural College.  
Silverton, Silverton College.
- Pennsylvania—Philadelphia, Philadelphia Cooking School, 1715 Chestnut street; School of Housekeeping, 12th and Sansom streets; Drexel Institute.  
Pittsburg, the School of Domestic Arts.  
Ridgeway, classes for housekeepers and cooks.

- Rhode Island—Providence, Providence Cooking School.  
 South Carolina—Orangeburg, Claflin University; Colored Normal College.  
 South Dakota—Brookings, State Agricultural College.  
 Tennessee—Harriman, American University of Harriman.  
 Utah—Logan, Agricultural College; Brigham Young College.  
 Virginia—Hampton, Normal and Agricultural Institute.  
 West Virginia—Morgantown, West Virginia University.  
 Wisconsin—Menomonee, Stout Manual Training School.  
 Milwaukee, Y. W. C. A. School of Domestic Arts; Downer College.  
 Cape Breton—Sydney, Training School and Home for Lady Immigrants.  
 Nova Scotia—Truro, Truro Normal Training School of Domestic Science.  
 Ontario—Hamilton, Ontario Normal School of Domestic Science; Mrs. M. C. Bradley's Hamilton School of Cookery.  
 Ottawa, Y. W. C. A. School of Domestic Science.  
 Toronto, Lillian Massey Normal School of Domestic Science, 145 Jarvis street; School of Domestic Science, 18 Elm street.  
 Quebec—Montreal, Y. W. C. A. School of Cookery.  
 Porto Rico—San Juan, Heye Memorial School of Domestic Science.

#### TRAINING SCHOOLS FOR NURSES.

- Albany, N. Y.—The Albany Hospital Training School for Nurses.  
 Ann Arbor, Mich.—University of Michigan Training School for Nurses, 1131 East Catherine street.  
 Baltimore, Md.—The Johns Hopkins Hospital Training School for Nurses, Broadway.  
 Maryland General Hospital Training School for Nurses.  
 Mount Hope Retreat Training School for Nurses.  
 Bangor, Me.—Bangor Training School for Nurses.  
 Beverly, Mass.—Beverly Hospital Training School for Nurses.  
 Binghamton, N. Y.—Binghamton State Hospital Training School for Nurses.  
 Boston, Mass.—The Boston City Hospital Training School for Nurses.  
 Massachusetts Homeopathic Hospital Training School for Nurses, East Concord street.  
 Training School for Nurses at New England Hospital for Women and Children, Dimock street.  
 Training School for Nurses of the Boston Children's Hospital.  
 Training School for Nurses of the Boston Lying-in Hospital, 24 McLean street.  
 Bridgeport, Ct.—Bridgeport Hospital Training School for Nurses.  
 Brooklyn, N. Y.—Brooklyn Maternity and New York State School for Training Nurses, Washington avenue and Douglass street.  
 Brooklyn Homeopathic Hospital Training School for Nurses, 100 Cumberland street.  
 Brooklyn Hospital Training School for Nurses.



- Brooklyn City Training School.  
 Long Island College Hospital Training School for Nurses.  
 Memorial Training School for Nurses.  
 Training School for Nurses at Methodist Episcopal Hospital.  
 Buffalo, N. Y.—Buffalo General Hospital Training School for Nurses, 100 High street.  
 Buffalo State Hospital Training School for Nurses.  
 Children's Hospital Training School for Nurses.  
 Burlington, Vt.—Mary Fletcher Hospital Training School for Nurses.  
 Charleston, S. C.—Charleston Training School for Nurses, City Hospital.  
 Chelsea, Mass.—Rufus S. Frost General Hospital Training School for Nurses.  
 Chicago, Ill.—Baptist Hospital Training School for Nurses, 34th street.  
 Hahnemann Hospital Training School for Nurses.  
 Illinois Training School for Nurses, 304 Monroe street.  
 Lakeside Hospital Training School for Nurses, 417 Lake avenue.  
 Mercy Hospital Training School for Nurses, Calumet avenue and 26th street.  
 Michael Reese Hospital School for Nurses, 29th street and Groveland avenue.  
 National Temperance Hospital Training School for Nurses, 1619 Diversey avenue.  
 Passavant Hospital Training School for Nurses.  
 Post-Graduate Training School for Nurses, 2400 Dearborn street.  
 St. Luke's Hospital Training School for Nurses, 1420 Indiana avenue.  
 School for Nurses of Mary Thompson Hospital, corner of Adams and Paulina streets.  
 Training School for Nurses at Women's Hospital of Chicago.  
 Wesley Hospital Training School for Nurses, 25th and Dearborn streets.  
 Cincinnati, O.—Cincinnati Hospital Training School for Nurses.  
 Clarinda, Ia.—Training School for Nurses at the Iowa Hospital for the Insane.  
 Cleveland, O.—Cleveland State Hospital Training School for Attendants.  
 Clinton, Mass.—Training School for Nurses at Clinton Hospital.  
 Columbia, S. C.—South Carolina State Hospital for the Insane Training School for Nurses.  
 Columbus, O.—Protestant Hospital Training School for Nurses, Park street.  
 Concord, N. H.—Margaret Pillsbury General Hospital Training School for Nurses.  
 New Hampshire Asylum for the Insane Training School for Nurses.  
 Danvers, Mass.—Training School for Nurses at the Danvers Insane Hospital.  
 Danville, Pa.—Training School for Attendants at the State Hospital for the Insane.

- Denver, Col.—Colorado Training School for Nurses in connection with the Arapahoe County Hospital.
- Des Moines, Ia.—Cottage Hospital Training School for Nurses, 1121 Fourth street.
- Detroit, Mich.—Detroit Emergency Hospital Training School for Nurses.
- Farrand Training School for Nurses.
- Grace Hospital School of Nursing.
- Fall River, Mass.—Fall River Hospital Nurse Training School.
- Fergus Falls, Minn.—Training School for Nurses, Hospital for the Insane.
- Grand Rapids, Mich.—U. B. A. Home and Hospital.
- Hartford, Ct.—Hartford Hospital Training School for Nurses.
- Training School for Nurses at the Retreat for the Insane.
- Independence, Ia.—Attendants' Training School at Iowa Hospital for the Insane.
- Indianapolis, Ind.—City Hospital Training School.
- Jersey City, N. J.—Christ Hospital Training School for Nurses.
- Kalamazoo, Mich.—Training School for Attendants at the Michigan Asylum for the Insane.
- Kankakee, Ill.—Illinois Eastern Hospital for the Insane Training School for Nurses and Attendants.
- Lawrence, Mass.—Training School for Nurses at General Hospital.
- Lewiston, Me.—Central Maine General Hospital Nurse Training School.
- Lowell, Mass.—Lowell Hospital Association Training School for Nurses.
- Malden, Mass.—Nurse Training School of the Malden Hospital.
- Manchester, N. H.—Training School for Nurses at the Elliot Hospital.
- Marion, Va.—Training School for Attendants at the South Western State Hospital.
- Middletown, Orange County, N. Y.—Training School for Nurses at Middletown State Homeopathic Hospital.
- Minneapolis, Minn.—Northwestern Hospital Training School.
- Morris Plains, N. J.—New Jersey State Hospital Training School for Nurses.
- Mount Pleasant, Ia.—Training School for Attendants at the Iowa Hospital for the Insane.
- Newark, N. J.—City Hospital Training School for Nurses.
- Newburyport, Mass.—Newburyport Training School for Nurses.
- New Haven, Ct.—Connecticut Training School for Nurses.
- New London, Ct.—Nurse Training School of the Memorial Hospital Association.
- New Orleans, La.—Charity Hospital Training School for Nurses.
- Touro Infirmary Training School for Nurses.
- Newport, R. I.—Newport Hospital School for Nurses.
- Newton, Mass.—Nurse Training School at the Newton Hospital.
- New York, N. Y.—City Hospital Male Training School, Blackwell's island.

- New York City Training School for Nurses, Blackwell's island.  
Hahnemann Hospital Training School for Nurses.  
New York Hospital Training School for Nurses, West 15th street.  
Manhattan State Hospital West Training School, Ward's island.  
Mount Sinal Training School for Nurses, 149 East 67th street.  
The Presbyterian Hospital Training School for Nurses.  
St. Luke's Hospital Training School for Nurses, 113th street and Amsterdam avenue.  
New York Training School for Nurses, 426 East 26th street, in connection with Bellevue Hospital.  
Margaret Fahnestock Training School for Nurses.  
Northampton, Mass.—Northampton Lunatic Hospital Training School for Nurses.  
Norwich, Ct.—William W. Backus Hospital Training School for Nurses.  
Orange, N. J.—Orange Training School for Nurses.  
Philadelphia, Pa.—Friends' Asylum for the Insane Training School for Nurses.  
Hospital of the University of Pennsylvania Training School for Nurses, 3400 Spruce street.  
Methodist Episcopal Hospital Training School for Nurses.  
Pennsylvania Hospital Training School for Nurses.  
Philadelphia Hospital Training School for Nurses.  
Philadelphia Polyclinic Training School for Nurses.  
Presbyterian Hospital Training School for Nurses, 51 North 39th street.  
Training School for Nurses of the Protestant Episcopal Church Hospital.  
Woman's Hospital of Philadelphia Training School for Nurses, North College avenue and 22d street.  
Pittsburg, Pa.—Training School for Nurses at Western Pennsylvania Hospital.  
Pittsfield, Mass.—Henry W. Bishop Memorial Training School for Nurses.  
Pontiac, Mich.—Eastern Michigan Asylum Training School for Attendants.  
Portland, Me.—Maine General Hospital Training School for Nurses.  
Portsmouth, N. H.—Training School for Nurses at the Portsmouth Cottage Hospital.  
Poughkeepsie, N. Y.—Hudson River State Hospital Training School for Attendants.  
Providence, R. I.—Rhode Island Hospital Training School for Nurses.  
Quincy, Mass.—Nurse Training School of the City Hospital.  
Rochester, Minn.—Rochester State Hospital Training School for Nurses.  
Rochester, N. Y.—Training School for Nurses, Rochester City Hospital.  
Training School for Nurses, Rochester State Hospital.  
Rockford, Ill.—Rockford Hospital Training School for Nurses.

- St. Louis, Mo.—St. Louis Training School for Nurses, 1224 Dillon street.
- St. Peter, Minn.—Training School for Nurses at St. Peter State Hospital.
- Salt Lake City, Utah—Nurses' Training School of St. Mark's Hospital.
- San Francisco, Cal.—Hospital for Children and Training School for Nurses, 3700 California street.
- St. Luke's Hospital Nurse Training School.
- Scranton, Pa.—Moses Taylor Hospital Nurse Training School.
- Scranton Training School for Nurses.
- Somerville, Mass.—Somerville Hospital Training School for Nurses.
- South Framingham, Mass.—Framingham Training School for Nurses.
- Springfield, Mass.—Nursing Institute, 563 South Main street.
- Syracuse, N. Y.—Syracuse Training School for Nurses, Hospital of House of Good Shepherd.
- Taunton, Mass.—Morton Hospital Training School for Nurses.
- Tewksbury, Mass.—State Hospital Training School for Nurses.
- Tuscaloosa, Ala.—Alabama Bryce Hospital Training School for Nurses.
- Utica, N. Y.—Training School for Attendants at Utica State Hospital.
- Washington, D. C.—Garfield Memorial Hospital Training School for Nurses.
- Waverly, Mass.—McLean Hospital Training School for Nurses.
- Westboro, Mass.—Training School for Nurses in connection with the Westboro Insane Hospital.
- Wilkesbarre, Pa.—Training School for Nurses of the Wilkesbarre City Hospital.
- Willard, N. Y.—Training School for Nurses at the Willard State Hospital.
- Williamsport, Pa.—Training School for Nurses of the Williamsport Hospital.
- Worcester, Mass.—Worcester City Hospital Department of Nursing.
- Memorial Hospital Training School for Nurses.

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There were two passages in the address of David J. Brewer, justice of the United States Supreme Court, before the international congress of lawyers and jurists at St. Louis in September, 1904, which were greeted with especially prolonged applause. This was one of them: "You can see 20 acres of Philippine life at the world's fair, but you cannot see a square rod of the constitution." And the other was of a character to make the great applause of similar significance: "The purchase which this great exposition commemorates was not the result of conquest and came not at the end of war. Not a gun was fired or a life lost. A lawyer, not a soldier, made the transfer. The glory of that transfer is one of the laurels of our profession."

## Libraries in the United States

The library at Peterboro, N. H., was established in 1833 and is considered the first public library in the country supported wholly or partly by public taxation. A free public library was established at Wayland, Mass., and opened to the public in 1850. A third was opened in March, 1853, at New Bedford, Mass. The public library movement is an American idea, but was taken up in England to some extent as a result of a parliamentary commission, which reported in 1850.

### SOURCES OF SUPPORT.

[Libraries of over 1000 volumes.]

Number	N A div	S A div	S C div	N C div	West- ern div	U. S.
Owning buildings .....	612	54	44	293	37	1040
Renting buildings .....	296	23	19	203	61	582
Supported by taxation.....	1029	113	94	931	208	2375
Supported by corporation.....	1329	302	269	793	177	2870
Supported by both .....	115	6	11	4	3	138
Free .....	1417	88	85	946	198	2784
Free for reference .....	701	233	191	486	124	1735
Subscription .....	355	100	98	236	65	914
Circulating .....	251	21	14	141	20	447
Reference .....	459	128	124	341	96	1148
Both circulating and reference..	1763	373	236	1246	271	3788

### LIBRARY OF CONGRESS.

The Library of Congress was established in 1800; destroyed by fire in 1814. In 1851, 35,000 volumes were destroyed by fire. The library is increased by appropriation, by copyright deposits, by gifts and exchanges. Special accessions have been: Peter Force collection, 22,539 volumes, and 37,000 pamphlets, 1867; Count de Rochambeau collection; MSS., 1883; Toner collection, 24,484 volumes, a gift, 1882; Hubbard collection, gift, 1898. The total volumes, 1,202,993, June 30, 1903, is the largest in the Western Hemisphere. In 1897 the collection was removed to the new library building, erected at a cost of \$6,347,000, additional cost of land \$585,000, occupying a floor space of about eight acres, and will accommodate 2,200,000 octavo volumes. The book stacks contain about 45 miles of shelving. There are 231 employees. The Law Library for congressional reference remains at the capitol.

The more books of the right kind are read, the more efficient a nation becomes. To deny that books of the right kind contribute to human efficiency, or that the great books of a nation contribute to a nation's efficiency, is like a refusal to acknowledge that heat comes from the sun, or motive power from steam. No man or woman who contests that sort of proposition deserves a hearing.—[Sidney Lee.

## THE LARGEST LIBRARIES.

Libraries of 100,000 vols. in 1900.	Date of founding	Vol-umes	Bks issued for home use, 1900	Total income	Librarian
California state library, Sacramento....	1852	113,600	—	\$44,693	J. L. Gillis
Mechanics' inst., San Francisco, Cal....	1855	100,170	153,613	26,776	Fred'k J. Teggart
San Francisco (Cal.) public library.....	1879	126,274	638,250	55,791	George T. Clark
Sutro library, San Francisco, Cal.....	—	200,000	—	—	—
Yale university, New Haven, Ct.....	1700	285,000	43,000	34,500	A. Van Name
Library of congress, Washington, D. C.	1800	1,000,000	17,898	340,580	Herbert Putnam
U. S. Senate, Washington, D. C.....	1868	125,000	—	—	James W. Baker
Surgeon general's office, Wash., D. C....	1870	135,058	—	—	J. C. Merrill
Newberry library, Chicago, Ill.....	1887	157,131	—	10,000	—
Chicago (Ill.) public library.....	1882	258,498	1,749,775	272,790	Frederick H. Hild
University of Chicago, Ill.....	1882	329,778	8,667	—	Zella A. Dixon
Kentucky state library, Frankfort....	—	101,000	—	1,200	P. H. Hardt
Enoch Pratt free lib., Baltimore, Md....	1882	202,118	746,623	55,000	Bernard C. Stiel
Peabody institute of Baltimore, Md....	1857	137,000	85,514	26,230	P. Reese Uhler
Boston (Mass.) public library.....	1854	772,432	1,317,497	302,457	H. G. Wadlin
State library of Mass. at Boston.....	1826	106,351	—	8,300	C. B. Tillinghast
Harvard university, Cambridge, Mass. 1638	1638	590,000	63,000	78,820	William C. Lane
City library assn., Springfield, Mass....	1857	115,091	164,091	45,208	H. C. Wellman
Am. antiquarian soc., Worcester, Mass. 1812	1812	100,000	—	—	Mary Robinson
Free public library, Worcester, Mass....	1859	128,196	196,485	44,058	Samuel S. Green
University of Michigan, Ann Arbor.....	1841	145,460	8,500	16,200	R. C. Davis
Detroit (Mich.) public library.....	1865	157,510	450,812	56,046	H. M. Utley
Michigan state library at Lansing.....	—	100,000	—	7,500	Mary C. Spencer
Minneapolis (Minn.) public library.....	1885	114,000	596,000	61,925	James K. Hosmer
St. Louis (Mo.) public library.....	1865	135,000	707,823	78,225	F. M. Cruden
St. Louis (Mo.) mercantile library.....	1846	113,587	100,969	52,839	Horace Kephart
Princeton university, Princeton, N. J....	1746	126,149	22,190	25,000	E. C. Richardson
New York state library, Albany.....	1818	423,240	22,597	110,671	Melvil Dewey
Cornell university, Ithaca, N. Y.....	1868	225,022	18,259	34,237	George W. Harris
A. W. Tam's music library, N. Y. city..	1885	500,000	—	25,000	Arthur W. Tams
Columbia university, New York city....	1754	295,000	—	—	J. H. Canfield

Free circulating library, N. Y. city.....	1880	163,465	1,585,577	98,487	J. N. Wing
Free library of the general society of mechanics and tradesmen, N. Y. city. 1820	109,955	130,818	6,622		Richard T. Davies
Mercantile library assn., N. Y. city..... 1820	282,043	133,356	26,516		W. T. Peoples
N. Y. historical soc. library, N. Y. city..... 1820	100,000	—	11,540		Robert H. Kelley
New York city public library..... 1825	500,000	—	150,000		J. S. Billings, dir.
New York society library, N. Y. city... 1754	100,000	35,434	127,061		F. B. Bigelow
Cincinnati (O.) public library..... 1867	203,684	511,334	65,423		N. D. C. Hodges
Cleveland (O.) public library..... 1869	165,686	19,422	79,943		William H. Brett
Pa. state library at Harrisburg..... 1790	101,906	—	25,175		T. L. Montgomery
Free library of Philadelphia, Pa..... 1891	207,585	1,778,387	164,000		John Thomson
Library company of Philadelphia, Pa... 1731	201,184	41,787	43,685		J. G. Barnwell
Mercantile library, Philadelphia, Pa.... 1821	185,000	10,000	12,450		John Edmonds
Carnegie library, Pittsburgh, Pa..... 1749	160,000	12,278	1,518		Morris Jastron
Univ. of Pa., Philadelphia, Pa..... 1895	104,844	345,590	93,739		E. H. Anderson
Brown university, Providence, R. I... 1767	110,000	7,172	15,068		H. L. Koopman
State historical society, Madison, Wis. 1854	110,000	—	12,328		I. S. Bradley
Milwaukee (Wis.) public library..... 1873	119,684	491,455	48,531		G. W. Peckham

**TRAVELING LIBRARIES FOR FARMERS.**

Every rural community can have a free library, if they desire it. Traveling libraries have become thoroughly established and are now part of the organization in most states. It was through the foresight of State Librarian Melvil Dewey of Albany, N. Y., that the first traveling library was sent out in 1886. The plan proved popular and filled a long-felt want and was quickly adopted by many other states. The condition of lending books by the state to rural communities requires that the library must be in a convenient place and open for the delivery and return of books for at least one hour for three days each week. Under no circumstances can a charge be made for the use of books. The New York state fee is \$2 for each 25 books and \$1 for each additional 25 books sent in the same shipment. This covers transportation and entitles the borrower to book cases, printed catalogs, blanks and cards. The books are shipped in wooden boxes, made for that purpose, are sent by freight except when express is cheaper. The transportation charges are paid both ways by the state. The time limit for the library in one place is six months, except for schools and clubs where the books are needed for the year's course of study. The library may be kept longer than six months by permission and the payment of \$1 for each additional two months. In Ohio and in Pennsylvania, the traveling library system has been rapidly developed, there being over 1000 libraries in each state.

**TOTAL NUMBER OF LIBRARIES AND NUMBER OF VOLUMES IN THE UNITED STATES.**

States and territories	Libraries over 1000 volumes	Less than 1000 but over 250	Total of 800 volumes and over	States and territories	Libraries over 1000 volumes	Less than 1000 but over 250	Total of 800 volumes and over
Me. ....	111	40	151	Okla. ....	8	8	10
N. H. ....	143	58	201	Ind. Ter. ....	3	4	7
Vt. ....	96	79	175	Ohio ....	266	212	478
Mass. ....	571	122	693	Ind. ....	164	157	321
R. I. ....	82	16	98	Ill. ....	309	197	506
Ct. ....	197	73	270	Mich. ....	193	164	357
N. Y. ....	718	295	1013	Wis. ....	165	144	309
N. J. ....	154	120	274	Minn. ....	123	92	215
Pa. ....	401	197	598	Ia. ....	170	199	369
Del. ....	13	10	23	Mo. ....	141	129	270
Md. ....	80	31	111	N. D. ....	16	23	39
Dist. of Col. ....	74	16	90	S. D. ....	26	20	46
Va. ....	64	38	102	Neb. ....	51	78	129
W. Va. ....	23	15	38	Kan. ....	104	111	215
N. C. ....	57	34	91	Mont. ....	14	16	30
S. C. ....	39	31	70	Wyo. ....	8	5	13
Ga. ....	55	53	108	Col. ....	54	28	82
Fla. ....	16	15	31	N. M. ....	11	4	15
Ky. ....	76	43	119	Ariz. ....	5	4	9
Tenn. ....	77	57	134	Utah ....	13	19	32
Ala. ....	43	20	63	Nev. ....	6	6	12
Miss. ....	30	37	67	Ida. ....	9	4	13
La. ....	40	18	58	Wash. ....	31	19	50
Tex. ....	69	77	146	Ore. ....	24	26	50
Ark. ....	28	21	49	Cal. ....	212	699	911

**LIBRARY SCHOOLS.**

Four library schools have been organized within 15 years to meet the demand for systematic training of librarians and assistants. Men and women are admitted. The schools are: New York State Library School at Albany; Pratt Institute Library School, Brooklyn; Library School of Drexel Institute, Philadelphia; University of Illinois State Library School. Summer courses in library training are offered at the New York State School at Albany, also at Chautauqua, Iowa State University, Wisconsin State University and the Amherst College Library. Two new schools have been established, one for the training of children's librarians, with two years' course, at the Carnegie Library of Pittsburg, and one at Simmons College, Boston, for young women only. A library school has also been organized at Western Reserve College, Cleveland, with an endowment from Andrew Carnegie.



## **Religion and Temperance**

### THE RURAL CHURCH.

As the number of abandoned farms multiplies each year, the churches in rural villages have a more serious problem to contend with. They cannot draw upon the government for their support, as do the schools, and hence any shrinkage in the population of a village has an impoverishing effect upon the churches. Then, too, in many country places, owing to poor roads, the people do not attend church, and offer no contribution to its support. In not a few instances it is the immigration of city people to the country alone that saves the churches from depletion. There are in the state of Maine 95 towns which have no religious services whatever, and the same condition exists in more villages in Illinois than in any other state in the Union. It is said that over half the state of Vermont never goes to church.

#### CHURCH STATISTICS.

[As compiled by Dr. Henry K. Carroll of the New York Independent.]

During 1902 there was a net gain of 720 ministers, 1261 churches and 403,743 communicants in all the denominations in this country. The increases for the various larger denominations, as far as communicants are concerned, are:

Catholics (eight bodies) .....	120,634
Methodists (17 bodies) .....	98,184
Lutherans (22 bodies) .....	49,320
Baptists (13 bodies) .....	48,654
Presbyterians (12 bodies) .....	30,001
Disciples of Christ .....	27,836
Protestant Episcopal (two bodies) .....	16,355
Congregationalists .....	13,330
United Brethren (two bodies) .....	10,345
Adventists (six bodies) .....	9,782
Reformed (three bodies) .....	8,498
German Evangelical Synod .....	5,875
Evangelical (four bodies) .....	4,311

Decrease: Dunkards, communicants 9000; German Evangelical Protestants, communicants 16,500; Latter-Day Saints, ministers 400, churches 86, communicants 3324; United Brethren, ministers 158, churches 172.

According to the revised (1898) edition of Mulhall's Dictionary of Statistics, there are 476,100,000 Christians and 654,200,000 non-Christians in the world. The same authority places the number of Roman Catholics in Europe, America and Australia at 223,090,000; Protestants, 157,050,000, and Greeks, 88,660,000. It has been estimated that there are in the world 256,000,000 followers of Confucius, 190,000,000 Hindoos, 148,000,000 Buddhists, 118,000,000 Polytheists, 43,000,000 Taoists, 14,000,000 Shintoists and 12,000,000 Jews.

**AMERICAN AGRICULTURIST**  
**RELATIVE STANDING.**

Year 1890	Denominations	Year 1902
1	Roman Catholic .....	1
2	Methodist Episcopal .....	2
4	Regular Baptist, South .....	3
3	Regular Baptist, Colored .....	4
5	Methodist Episcopal, South .....	5
8	Disciples .....	6
7	Presbyterian North .....	7
6	Regular Baptist, North .....	8
9	Protestant Episcopal .....	9
11	African Methodist Episcopal .....	10
10	Congregational .....	11
12	Lutheran Synodical Conference .....	12
13	African Methodist Episcopal, Zion.....	13
14	Lutheran General Council .....	14
21	Latter-Day Saints .....	15
15	Reformed German .....	16
16	United Brethren .....	17
18	Presbyterian, South .....	18
17	Lutheran General Synod .....	19
20	German Evangelical Synod .....	20
23	Colored Methodist Episcopal .....	21
19	Cumberland Presbyterian .....	22
22	Methodist Protestant .....	23
25	United Norwegian Lutheran .....	24
26	United Presbyterian .....	26
27	Reformed Dutch .....	27

The Latter-Day Saints have shown in 12 years the greatest gain in standing, having moved from the 21st to the 15th position. Dr. Carroll notes that a new Lutheran Synod, the Slovakian, has been organized in this country during the year, composed of Finns.

**THE RELIGIOUS EDUCATION ASSOCIATION.**

Owing to a general feeling throughout the country that the Sunday schools are not accomplishing all that they might do, and that the young people seem to be deficient in religion and morality, a meeting of those interested in bettering these conditions was called in Chicago in 1903. The meeting was attended by representatives of 15 denominations, from 23 states and from Canada, and the result was the forming of the Religious Education Association, having 17 departments fully organized and dealing with colleges, theological seminaries, churches, Sunday schools, public schools, teachers, young people's societies, the home, libraries, summer assemblies, music and the like. The officers were chosen from all parts of the

country. The association now has over 1800 members and is constantly growing; there are members in every state in the Union, besides Canada, England, France, Germany, Turkey, India and Japan and South Africa. Its headquarters are at 153-155 LaSalle street, Chicago. The president of the association at present is Charles Cuthbert Hall, president of Union theological seminary, New York city, and Ira Landrith of Chicago is the general secretary.

### SUNDAY SCHOOLS IN THE UNITED STATES.

[Compiled by the American Sunday School Union.]

These statistics do not include Roman Catholic, Hebrew nor non-Evangelical church schools (except in Maryland). There are about 750,000 scholars in Roman Catholic Sunday schools, and about 225,000 in other schools not counted. This would leave from 7,000,000 to 9,000,000 youths between four and 16 years of age in the United States not in Sunday schools of any denomination.

State or ter.	Schools	Schol-ars	State or ter.	Schools	Schol-ars
Ala. ....	4,000	215,000	Neb. ....	2,557	168,515
Alaska .....	39	2,074	Nev. ....	59	3,342
Ariz. ....	85	5,660	N. H. ....	624	42,482
Ark. ....	2,050	151,000	N. J. ....	2,323	311,509
Cal. ....	1,688	118,845	N. M. ....	97	3,651
Col. ....	841	66,575	N. Y. ....	8,487	1,061,873
Ct. ....	1,260	125,000	N. C. ....	5,817	342,734
Del. ....	392	39,592	N. D. ....	816	55,488
Dist. Columbia.	252	46,667	Ohio ....	7,671	713,413
Fla. ....	2,400	94,870	Okla. ....	1,000	50,000
Ga. ....	4,616	253,410	Ore. ....	1,093	81,474
Ida. ....	205	11,527	Pa. ....	9,931	1,283,843
Ill. ....	7,981	717,307	R. I. ....	355	49,932
Indian Ter. ....	387	16,393	S. C. ....	4,703	340,303
Ind. ....	5,617	515,568	S. D. ....	800	48,378
Ia. ....	4,243	378,734	Tenn. ....	4,870	285,266
Kan. ....	4,293	261,763	Tex. ....	5,591	343,024
Ky. ....	3,234	208,985	Utah ....	135	7,053
La. ....	820	55,000	Vt. ....	781	54,230
Me. ....	2,006	110,315	Va. ....	4,800	330,000
Md. ....	2,531	206,156	Wash. ....	1,451	81,575
Mass. ....	1,917	277,492	W. Va. ....	2,024	152,945
Mich. ....	4,538	370,707	Wis. ....	6,768	447,617
Minn. ....	1,928	174,569	Wyo. ....	124	6,847
Miss. ....	2,025	101,280	Hawaii ....	230	15,840
Mo. ....	6,725	651,111			
Mont. ....	321	17,334	Total .....	139,501	11,474,441

## MISSIONARY TRAINING SCHOOLS.

Atlanta, Ga.—Stewart Missionary Foundation for Africa (Methodist).

Berrien Springs, Mich.—Emanuel Missionary College (Industrial Institute).

Boston, Mass.—Gordon Missionary Training School (Independent).

Oriental Missionary Seminary (Independent).

Brooklyn, N. Y.—Union Missionary Training Institute (Independent).

Chicago, Ill.—Moody Bible Institute (Independent).

Training School for City, Home and Foreign Missions (Methodist).

Missionary Training School (Baptist).

Hartford, Ct.—School of Religious Pedagogy (Independent).

Special Missionary Courses (Hartford Seminary).

Herkimer, N. Y.—Folt's Mission Institute (Methodist—for women).

Kansas City, Mo.—Scarriet Bible and Training School (Methodist).

Los Angeles, Cal.—Training School for Christian Workers (Independent).

New York, N. Y.—Deaconess' Home and Training School (Methodist).

Training School for Deaconesses (Protestant Episcopal).

Bible Teachers' Training School (Independent).

Nyack, N. Y.—Bible Teachers' Training School (Independent).

Northfield, Mass.—Bible Training School (Independent).

Philadelphia, Pa.—Training School for Christian Work (Baptist).

San Francisco, Cal.—Missionary Extension School (Independent).

Wooster, O.—Bible and Missionary Training School (Presbyterian).

Xenia, O.—Training School for Christian Workers (Independent).

## RELIGIOUS SOCIETIES.

Actors' Church Alliance—Rev. W. E. Bentley, secretary, New York City.

American Purity Alliance—Mrs. Anna R. Powell, secretary, 243 East Sixth street, Plainfield, N. J.

American Society of Religious Education—J. E. Gilbert, D. D., general secretary, 12th and G streets, N. W., Washington, D. C.

American Unitarian Association—Rev. C. E. St. John, secretary, 25 Beacon street, Boston, Mass.

Baptist Young People's Union of America—Rev. Walter Caley, general secretary, 324 Dearborn street, Chicago, Ill.

Boys' Welcome Hall Association—Mrs. F. McCammon, secretary, 185 Chauncey street, Brooklyn, N. Y.

Brotherhood of Andrew and Philip—Rev. J. G. Hammer, Jr., general secretary, Newark, N. J.

Brotherhood of St. Andrew—Herbert Carleton, secretary, Pittsburg, Pa.

Christian and Missionary Alliance—Rev. A. E. Funk, general secretary, New York City.

Girls' Friendly Society in America—Miss E. Alexander, secretary, 659 West Lexington street, Baltimore, Md.

Mission Board of Seventh Day Adventists—W. A. Spicer, secretary, Battle Creek, Mich.

National Christian League for the Promotion of Social Purity—Frances M. Applegate, corresponding secretary, 33 East 22d street, New York City.

National Conference of Unitarians—Rev. W. F. Greenman, general secretary, 25 Beacon street, Boston, Mass.

Salvation Army—Col. E. J. Higgins, secretary, 120 and 124 West 14th street, New York City.

Student Volunteer Movement for Foreign Missions—F. P. Turner, general secretary, 3 West 29th street, New York City.

United Society of Christian Endeavor—J. W. Baer, general secretary, 646 Washington street, Boston, Mass.

United Society of Free Baptist Young People—H. S. Myers, general secretary, Hillsdale, Mich.

Volunteers of America—38 Cooper square, New York City.

Women's Centenary Association—Mrs. N. M. Stouder, corresponding secretary, Muncie, Ind.

Woman's Home Missionary Society of the Methodist Protestant Church—Mrs. W. A. Morris, corresponding secretary, Kansas City, Kan.

## TEMPERANCE ORGANIZATIONS.

Young People's Prohibition League; secretary, Susie A. Stearns, Saratoga, N. Y.

National Woman's Christian Temperance Union; corresponding secretary, Mrs. Susan M. D. Fry, Chicago, Ill.

Prohibition Union for Christian Men; secretary, Howard L. Wilson, Rochester, N. Y.

Catholic Total Abstinence Union of America; secretary, Rev. A. P. Doyle, New York City.

Good Templars; secretary, Col. B. F. Parker, Milwaukee, Wis.

Young People's Christian Temperance Union; corresponding secretary, Mattie G. Squires, Chicago, Ill.

Intercollegiate Prohibition Association; secretary, Harry S. Warner, Chicago, Ill.

American Anti-Saloon League; corresponding secretary, James L. Ervin, Washington, D. C.

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The best work for temperance is a temperate life. You may be a teetotaler, yet be intemperate in food or speech. Most adults eat too much and we surely all talk too much.

## LAWS REGULATING SALE OF LIQUOR.

The following table shows the legal attitude of the various states and territories as to the liquor traffic, whether prohibition, county option, local option or license. Where license prevails, the amount is given, and where this amount varies, the minimum and maximum are indicated. "County option" includes also local option; the term "local option" indicates the right to prohibit in cities, towns and villages only:

- Alabama—County option for prohibition, license, dispensary; fee, \$175—\$350.
- Alaska—Prohibition under acts of Congress.
- Arizona—Local option; quarterly fee, \$48—\$200.
- Arkansas—County option; fee, \$800.
- California—Local option; fee fixed by local authorities.
- Colorado—Local option; fee, \$25—\$300 in counties, \$500—\$600 in towns and cities.
- Connecticut—Local option; fee, \$150—\$450.
- Delaware—License by courts; fee, \$100—\$450.
- District of Columbia—License by commissioners on consent of property owners; fee, \$500.
- Florida—County option; fee, \$500.
- Georgia—County option for prohibition, license or dispensary; fee in Atlanta, \$1000—\$2000; in counties, \$200.
- Idaho—License by authorities; fee, \$300—\$500; hotels out of towns, \$100.
- Illinois—Local option; fee, \$500, minimum.
- Indiana—Local option; fee, \$250—\$350.
- Kentucky—County option; fee, \$100—\$150.
- Louisiana—State or local license; fee according to amount of business, \$5—\$3500.
- Maine—Prohibition.
- Maryland—Local option; fee, \$12—\$450.
- Massachusetts—Local option; fee not less than \$1000; number limited, one to 1000 inhabitants; in Boston, one to 500.
- Minnesota—Local option; fee, \$500—\$1000.
- Mississippi—County option; fee, \$600—\$1200.
- Missouri—Local option; semi-annual fee, \$300—\$600.
- Montana—Local option; semi-annual fee, \$150—\$300.
- Nebraska—Local option; fee, \$500—\$1000.
- Nevada—License by county commissioners; fee, \$30—\$600.
- New Hampshire—Local option; high license.
- New Jersey—Local option; fee, \$100—\$250.
- New Mexico—License by county commissioners; fee, \$100—\$400.
- New York—Local option in towns, but not in cities; fee, \$100—\$800, according to population.
- North Carolina—County option; semi-annual fee of \$50.
- North Dakota—Prohibition.
- Ohio—Local option; fee, \$350.
- Oklahoma—License by county officers; fee, \$200.
- Oregon—License on petition of voters; fee, \$200.
- Pennsylvania—License under control of courts; fee, \$75—\$1000.

- Rhode Island—Local option; fee, \$200—\$1000.  
 South Carolina—State control.  
 South Dakota—License by local authorities; fee, \$400—\$600.  
 Tennessee—Prohibition except in cities of over 5000 inhabitants; fee, \$150—\$200.  
 Texas—License issued by courts; fee, \$300.  
 Utah—License granted by local authorities; fee, \$400.  
 Vermont—Local option; high license.  
 Virginia—County option; fee, \$100—\$200, 8 per cent on rental value.  
 Washington—License issued by local authorities; fee, \$300—\$1000.  
 West Virginia—License by courts and local authorities; fee, \$350.  
 Wisconsin—Local option; fee, \$100—\$200, with power in voters to increase from \$400—\$500.  
 Wyoming—License issued by local authorities; fee, \$100—\$300.

INCREASE IN LIQUOR CONSUMPTION.

Distilled spirits, wines and malt liquors, quantities consumed and average annual consumption per capita in the United States from 1899-1903:

Year ended June 30	Distilled spirits, proof gals.	Wines, gallons	Malt liquors, gallons	Total consumption of wines and liquors, gallons	Total consumption per capita			
					Of distilled spirits, p. gallons	Of wines, gallons	Of malt liquors, gallons	Of all liquors and wines, gals.
'03..	117,251,716	—	1,449,879,377	—	1.46	—	18.04	—
'02..	107,452,151	49,754,403	1,381,875,437	1,539,081,991	1.36	0.63	17.49	19.48
'01..	103,086,839	28,791,149	1,258,249,391	1,390,127,379	1.33	0.37	16.20	17.90
'00..	97,248,382	30,427,491	1,221,500,160	1,349,176,033	1.27	0.40	16.01	17.86
'99..	87,310,228	26,360,696	1,135,520,629	1,249,191,553	1.17	0.35	15.28	16.80

REVENUES FROM INTOXICANTS.

The following table shows the governmental revenues from alcoholic beverages, from statistics published in 1901:

	Net revenue from tax on drink	Proportion to total national revenue
United Kingdom .....	\$47,870,000	36 per cent
France .....	22,034,000	19 per cent
Germany .....	13,717,000	18 per cent
United States .....	39,968,000	29 per cent

## CENSUS CLASSIFICATION OF LIQUOR OCCUPATION.

The following table does not include the large number of those whom the census lists as hotel keepers, restaurant keepers and under other classifications, and who are also saloon keepers. The women who keep saloons are found in every state and territory except Alaska, Florida, Hawaii, Indian Territory, North Dakota and Oklahoma:

	Male	Female	Total
Saloon keepers .....	81,789	2,086	83,875
Bartenders .....	88,497	440	88,937
Brewers and maltsters .....	20,709	275	20,984
Distillers and rectifiers .....	3,115	90	3,205
Liquors and wines .....	12,928	191	13,119
	207,038	3,022	210,060

## AMERICAN AND BRITISH DRINK FIGURES.

Consumption in 1903	In United States	In Great Britain
Coffee, per capita, pounds.....	10.79	0.68
Tea, per capita, pounds .....	1.3	6.05
Distilled liquors, per capita, gallons.....	1.46	1.05
Wines, per capita, gallons.....	0.48	0.36
Malt liquors, per capita, gallons.....	18.04	30.24

## LITERATURE VS. LIQUOR.

... It has been estimated that the people of the United States spend \$174,965,625 annually for literature, including newspapers, periodicals and books, while the nation's annual drink bill amounts to \$1,249,191,553. In other words \$1,074,225,928 more is paid out every year for intoxicating liquors than for literature of all kinds. In Great Britain, \$34,000,000 is annually expended for literature, against \$800,000,000 for liquors, the drink bill in this case amounting to \$766,000,000 more than what is paid for reading matter.

Nothing is so great a friend to the mind of man as temperance. It strengthens the memory, clears the apprehension and sharpens the judgment, and, in a word, gives reason its full scope of action.—[Dr. South.

Intemperance is a crime leading to all other crimes.—[Justice Fitzgerald, England.

The skeleton of an average whale weighs 25 tons.



## **Marriage and Divorce**

### **MARRIAGE LAWS.**

**Marriage Licenses**—Required in all the states and territories, except New Mexico, New Jersey, New York, North Dakota, Oklahoma and South Carolina.

**Marriage, Prohibition of**—Marriages between whites and persons of negro descent are prohibited and punishable in Alabama, Arizona, Arkansas, California, Colorado, Delaware, District of Columbia, Florida, Georgia, Idaho, Indiana, Kentucky, Maryland, Mississippi, Missouri, Nebraska, Nevada, North Carolina, Oklahoma, Oregon, South Carolina, Tennessee, Texas, Utah, Virginia and West Virginia.

**Marriages between whites and Indians** are void in Arizona, Nevada, North Carolina, Oregon and South Carolina.

**Marriages between whites and Chinese** are void in Arizona, Nevada, Oregon and Utah.

**The marriage of first cousins** is forbidden in Arizona, Arkansas, Illinois, Indiana, Kansas, Missouri, Montana, Nevada, New Hampshire, North Dakota, Ohio, Oklahoma, Oregon, South Dakota, Washington and Wyoming, and in some of them is declared incestuous and void, and marriage with step-relatives is forbidden in all the states, except California, Colorado, Florida, Georgia, Idaho, Louisiana, Minnesota, Nebraska, New Mexico, New York, North Carolina, Oregon, Utah and Wisconsin.

**Marriage, Age to Contract, Without Consent of Parents**—In all the states which have laws on this subject, 21 years is the age for males, and for females 21 years in Connecticut, Florida, Illinois, Kentucky, Louisiana, Ohio, Pennsylvania, Rhode Island, South Dakota, Virginia, West Virginia and Wyoming, and 18 in all the other states having laws, except Maryland, in which it is 16 years.

**Marriages, Voidable**—Marriages are voidable in nearly all the states when contracted under the age of consent to cohabit.

### **DIVORCE LAWS.**

**Alabama**—Divorce may be obtained for the following causes: Impotency, adultery, desertion for two years, habitual drunkenness, imprisonment for two years and continued cruelty. An allowance must be made by the court, out of the husband's estate, for the support of the wife pending suit; also an allowance when the decree is made. The custody of minor children may be given to either parent, in the discretion of the court.

**Arizona**—Divorce may be granted for the violation of the marriage vow, physical incapacity, willful desertion for six months, habitual drunkenness, conviction for felony, cruelty, failure by husband to provide for six months.

**Arkansas**—Divorce may be granted for impotency, bigamy, adultery, conviction of felony, habitual drunkenness, willful desertion for one year, cruel and barbarous treatment. Plaintiff must reside in the state one year before bringing suit. Court may allow alimony to the wife.

California—Divorces are granted for adultery, extreme cruelty, conviction of felony, willful desertion, neglect or habitual intemperance continued for one year. No divorce can be granted by default.

Colorado—Divorces may be granted for adultery, impotency, bigamy, willful desertion for one year, habitual drunkenness for two years, extreme cruelty or conviction for felony or infamous crime. One year's residence in the state is required before bringing suit, except where the offense was committed in the state or while one or both parties resided there.

Connecticut—Absolute divorce may be granted by the superior court for adultery, fraud, duress or force in obtaining the marriage, willful desertion for three years, seven years' absence without being heard of, habitual intemperance, intolerable cruelty, sentence to imprisonment for life, the commission of any crime punishable by imprisonment in the state penitentiary, and any such misconduct as permanently destroys the happiness of the petitioner and defeats the purposes of the marriage relation. Three years' residence in the state is necessary before filing a petition. Either party may marry again after divorce, and the court may change the wife's name and make order for alimony and custody of the children.

North and South Dakota—Divorce may be granted for violation of the marriage vow, willful desertion, conviction for felony, cruelty and physical incapacity.

Delaware—Divorce may be granted by the superior court for adultery, impotency at the time of marriage, habitual drunkenness, extreme cruelty, desertion for three years or conviction of crime sufficient to constitute a felony. In the case of marriage by fraud or for want of age, the wife being less than 16, the husband being less than 18 at the time of marriage, absolute divorce or divorce from bed and board may be granted, at the discretion of the court. The wife receives all her real estate and such other allowance and alimony as the court may decree where the husband is proved to be in fault. Willful neglect of the husband to provide the necessities of life also forms sufficient grounds for divorce.

District of Columbia—Divorce may be granted for violation of the marriage vow, physical incapacity, willful desertion for two years, habitual drunkenness, conviction for felony, cruelty, insanity or idiocy at time of marriage.

Florida—Applicants for divorce must have resided two years within the state. Absolute divorces may be granted only by the circuit courts. Adultery, impotency, bigamy, extreme cruelty, habitual intemperance or desertion for one year are sufficient causes. Alimony may be granted to the wife by the courts, and provision for a division of property when a decree is granted.

Georgia—Grounds for total divorce are as follows: Marriage within the prohibited degrees of affinity or consanguinity; mental or physical incapacity at the time of marriage, force, menace, duress or fraud in obtaining it; adultery, willful desertion by either party for three years; cruel treatment by, or habitual intoxication of either party; or sentence to the penitentiary for two years or over for any offense involving moral turpi-

tude. No total divorce may be granted except by the concurrent verdict of two juries, rendered at different times of court; and when a divorce is granted, the jury rendering the final verdict determines the rights and disabilities of the parties.

**Idaho**—Divorce may be granted for violation of the marriage vow, willful desertion for one year, habitual drunkenness, conviction for felony, cruelty, failure of husband to provide for one year, insanity and confinement in an asylum six years.

**Illinois**—Divorce may be granted, where complainant has been a resident of the state for one year, for impotency, bigamy, adultery, desertion or drunkenness for two years, attempts upon the life of the other by poison or other means showing malice, extreme cruelty, conviction of felony or other infamous crime. If no defense is interposed, decree may be granted on testimony of complainant alone; but examination of witnesses must be had in open court, and the judge is required to be satisfied that all proper means have been taken to notify defendant. When decree is granted, the court may restore the wife's maiden name. During pendency of suit, the court may require the husband to pay such sum as may enable the wife to maintain or defend the suit, and alimony when declared just and equitable.

**Indiana**—Petitioners for divorce must be bona fide residents of the state for two years, and of the county at the time of, and for at least six months prior to, filing the petition; the oath of two resident freeholders being required to this fact. Decrees may issue by the superior or circuit court for the following causes: Impotency at marriage, adultery (where connivance or collusion is not proven), habitual cruelty or habitual drunkenness by either party, abandonment for two years, failure by the husband to provide for the family for a period of two years, and conviction of either party of an infamous crime at any time subsequent to marriage.

**Iowa**—Divorce may be granted by the district or circuit court of the county in which plaintiff resides. Plaintiff must declare under oath that he or she has resided in the state for one year next preceding the filing of the petition, unless defendant is resident; and received personal service of the writ. A decree may issue against the husband for adultery, willful desertion for two years, conviction of felony subsequent to marriage, habitual drunkenness and continued ill treatment. The husband may obtain a decree for like causes, and also when the wife at the time of marriage was pregnant by another. Bigamy or impotency at the time of marriage is also a sufficient cause to annul.

**Kansas**—To obtain a decree of divorce, plaintiff must bring suit in the county or residence. Decrees are granted in the circuit court on the following grounds: Adultery, impotency, fraudulent contract, extreme cruelty, habitual drunkenness, gross neglect, abandonment for one year or conviction of felony.

**Kentucky**—Before a petition can be presented for a decree of divorce, one year's continuous residence in the state is required. Jury trials are not permitted, and decrees are granted by courts having equitable jurisdiction. An absolute divorce may be granted to the party not in fault on the ground of adul-

tery, impotency, etc, separation for five years, condemnation for felony subsequent to the marriage, force, duress or fraud in obtaining the marriage, or uniting with any religious society which requires a renunciation of the marriage contract. Habitual neglect or maltreatment on the part of the husband, or where the husband is a confirmed drunkard, may give the wife a divorce; and where the wife is proven unchaste, or pregnant by another man at the time of marriage, the husband is entitled to divorce. The parties are free to marry again, and their personal property is restored.

Louisiana—Sentence of either party to imprisonment in the penitentiary is sufficient grounds for divorce. A decree may also be obtained by either party for adultery, habitual intemperance or cruel treatment of such nature as to render living together insupportable.

Maine—The supreme judicial court grants divorce for impotency, adultery or for three years' willful desertion. Alimony may be allowed and dower if the husband is to blame.

Maryland—Absolute, for adultery, three years' abandonment, or ante-nuptial misconduct of wife. Partial, for cruelty, abandonment, and desertion. Alimony and restoration of wife's property.

Massachusetts—Unfaithfulness, incapacity, three years' desertion, cruelty, drunkenness, neglect to provide, sentence to five years' imprisonment and joining a sect which disavows marriage, are grounds for absolute divorce. Alimony is allowed and where the husband is at fault the wife's personal property is restored.

Michigan—Absolute divorce may be granted for incapacity at the time of marriage, adultery, two years' continuous desertion, drunkenness or three years' sentence to imprisonment. A life sentence dissolves the marriage without any proceedings in court. Divorce from bed and board for cruelty and neglect to provide. Separation of property, dower and alimony as per statute.

Minnesota—Absolute divorce for unfaithfulness, incapacity, three years' abandonment, one year's drunkenness, cruel treatment or sentence to state's prison. Limited divorce for abuse, desertion or failure to support. Plaintiff, except where breach of faith occurred in the state, must have been one year a resident. The court may order alimony and custody of the children, and the wife regains possession of her real estate, unless decree has been obtained on account of her bad conduct.

Mississippi—After one year's residence in the state, divorce may be obtained for impotency, adultery, bigamy, cruelty, two years' abandonment or imprisonment in the penitentiary. Alimony is allowed when the wife is the injured party, and the court awards the custody of minor children.

Missouri—Grounds: Impotency at time of marriage, unfaithfulness, bigamy, conviction of crime, drunkenness, cruelty, and one year's desertion. Petitioner must have been one year a resident of the state. Trial without jury.

Montana—Divorce may be granted for violation of the marriage vow, physical incapacity, willful desertion one year, habitual drunkenness, conviction for felony, cruelty.

**Nebraska**—Unless the marriage took place in the state, and the plaintiff has since continuously resided therein, a residence in the county of six months next preceding the application is necessary. Divorce is granted on the grounds of impotency at the time of marriage, adultery, two years' desertion, drunkenness, cruelty, three years' sentence to imprisonment, or failure on the part of husband to support wife. The court may order alimony, and where a decree is granted on account of the husband's bad conduct the wife takes dower.

**Nevada**—Plaintiff must have resided six months in the county. Grounds of divorce are physical incompetency at time of marriage, adultery, one year's desertion, drunkenness, cruelty, conviction of crime, and failure on part of husband to support.

**New Hampshire**—Divorces are granted by the superior court for physical incompetency, adultery, drunkenness, cruelty, three years' desertion, one year's sentence to prison or adherence to a religious sect that condemns marriage.

**New Jersey**—Absolute for adultery, bigamy, two years' abandonment and intolerable cruelty. Applicant must reside in the state, unless the marriage or the alleged misconduct occurred here.

**New Mexico**—Divorce may be granted for violation of the marriage vow, habitual drunkenness, cruelty, failure of husband to provide.

**New York**—Only for adultery will an absolute divorce be granted. Partial divorce is ordered for cruelty, desertion and neglect. Marriages are annulled for fraud or force, idiocy, lunacy or impotency at the time of marriage, or for bigamy.

**North Carolina**—Only for impotency or adultery can absolute divorce be obtained. Partial divorce is granted for cruelty, desertion or drunkenness.

**Ohio**—Divorce is granted for unfaithfulness, bigamy, incapacity, cruelty, drunkenness, deception, three years' neglect and abandonment, or imprisonment in a penitentiary. Alimony may be granted; and if the decree is obtained on account of the husband's ill conduct, the wife has her separate property and her maiden name restored.

**Oklahoma**—Divorce may be granted for violation of the marriage vow, physical incapacity, willful desertion one year, habitual drunkenness, conviction of felony, cruelty.

**Oregon**—Plaintiff must have been a resident for one year before bringing suit. Grounds are impotency, adultery, two years' drunkenness, three years' abandonment, cruelty, conviction of felony. Plaintiff gaining the suit has a right to one-third of the real estate belonging to defendant; and if a successful plaintiff be the wife, she may have a maintenance awarded her.

**Pennsylvania**—Plaintiff must have been a resident of the state for one year next preceding the application. Grounds: Deception or force in procuring the marriage, impotency, adultery, bigamy, cruelty and two years' abandonment, and two years' sentence to imprisonment. Divorce will not be granted on the ground of adultery if proved to have been condoned. Even after a divorce, defendant is not allowed to marry a co-

respondent. A wife may obtain partial divorce and alimony for ill treatment.

Rhode Island—Divorce is granted for impotency, adultery, cruelty, drunkenness, neglect to support, five years' abandonment, conviction of murder or arson, presumption of death from long absence, or for defect in marriage rendering it void. Divorce may only be decreed by supreme court. Alimony may be ordered, and restoration of wife's separate property.

South Carolina—Has no divorce laws.

Tennessee—The applicant must have been a resident of the state for two years next preceding the petition. Grounds: Physical incapacity at time of marriage, bigamy, adultery, two years' abandonment, conviction of crime, imprisonment in penitentiary, drunkenness, ante-nuptial immorality of wife, attempt of either party upon the life of the other. Limited divorce may be granted for cruelty, desertion or failure to provide.

Texas—Applicant must be really an inhabitant of the state and a resident of the county for six months previous to filing petition; grounds: adultery, three years' desertion, unendurable cruelty.

Utah—Divorce may be granted for violation of the marriage vow, willful desertion one year, habitual drunkenness, conviction for felony, cruelty, failure of husband to provide, parties cannot live in peace and union.

Vermont—Divorce is granted for adultery, cruelty, three years' abandonment, three years' imprisonment in penitentiary or seven years' absence without being heard of. The wife may obtain divorce where the husband, being able, fails to support.

Virginia—Grounds: Impotency, adultery, sentence to penitentiary, guilt of either of infamous crime before marriage, the other being ignorant, notorious immorality of wife before marriage, five years' abandonment. Partial divorce for cruelty or desertion. Alimony and maintenance of children are decreed, and the care of the children is given to either party at the discretion of the court.

West Virginia—Divorce is granted for mental or physical defect at time of marriage, unfaithfulness, three years' abandonment, sentence to penitentiary, conviction of crime before marriage, or notorious immorality of either before marriage, the other party being ignorant. Partial divorce may be obtained for cruelty or desertion. Alimony and custody of children is decreed by the court.

Washington—Divorce may be granted for violation of the marriage vow, physical incapacity, willful desertion one year, conviction for felony, cruelty, fraud and fraudulent contract, indignities as render life burdensome, insanity lasting ten years.

Wisconsin—Unless the parties had been married and since remained in the state, the applicant must have been for one year a resident before filing a petition. Absolute divorce is granted for impotency, adultery, one year's abandonment, five years' separation, three years' sentence to penitentiary, cruelty and drunkenness. Partial divorce for desertion, cruelty, drunkenness or failure to provide. The court may decree alimony, and the wife regain her separate property.

Wyoming—Divorce may be granted for violation of the marriage vow, physical incapacity, willful desertion one year, habitual drunkenness, conviction for felony, cruelty, failure of husband to provide one year, indignities as render life burdensome, vagrancy of husband.

TO RAISE THE AGE OF CONSENT

In many of the states, the age at which a girl may consent to her own ruin is deplorably low; in fact, years before the age of discretion has been reached, as in Alabama, Mississippi and some of the other southern states, where it is only 10. It is rather a sad state of affairs when mere infants can be seduced and no redress is obtainable, and shows the crying need of a raise in the age of consent. If a uniform age, say 18 years, could be established throughout the country, and all cases under that counted as rape, the number of wronged girls might be decreased. Common law fixes at 14 years the age at which a male can commit rape and be held responsible. The following table shows the age of consent in all the states and territories:

Alabama .....	10	Nebraska .....	18
Arizona .....	18	Nevada .....	12
Arkansas .....	16	New Hampshire .....	13
California .....	14	New Jersey .....	16
Colorado .....	18	New Mexico .....	14
Connecticut .....	16	New York .....	18
Delaware .....	18	North Carolina .....	10
Florida .....	10	North Dakota .....	16
Georgia .....	14	Ohio .....	16
Idaho .....	18	Oklahoma .....	14
Illinois .....	14	Oregon .....	16
Indiana .....	14	Pennsylvania .....	16
Indian Territory .....	12	Rhode Island .....	16
Iowa .....	15	South Carolina .....	14
Kansas .....	18	South Dakota .....	16
Kentucky .....	12	Tennessee .....	14
Louisiana .....	12	Texas .....	15
Maine .....	14	Utah .....	18
Maryland .....	16	Vermont .....	14
Massachusetts .....	16	Virginia .....	12
Michigan .....	16	Washington .....	16
Minnesota .....	16	West Virginia .....	16
Mississippi .....	10	Wisconsin .....	14
Missouri .....	18	Wyoming .....	18
Montana .....	16		

UNIFORM DIVORCE LAWS.

Strong efforts are now being made by the Reform Bureau at Washington, Rev. Wilbur F. Crafts, superintendent, and also by the National League for the Protection of the Family, to bring about the enactment of the proposed amendment to the United States constitution, whereby Congress shall have power to establish uniform marriage and divorce laws through-

out the United States, and to provide penalties for violations thereof. Already Congress has enacted a uniform marriage law for all the territories, and made the term of residence in them one year before a divorce can be obtained, but it is desired to bring the divorce laws in all the states up to the highest grade found in state laws, namely, to that of New York, where absolute divorce with permission to remarry is allowed only in cases of adultery.

Thirty-five states have created commissions on uniform legislation to prepare a bill on uniform procedure in divorce cases, but so far as can be learned, nothing has yet been done by them.

The National League for the Protection of the Family was organized in 1881 by ex-Pres. Woolsey of Yale and others of high standing, for the purpose of counteracting the evils that threaten the integrity and efficiency of the family. The president of the league is Hon. Nathaniel Shipman of Hartford, Ct., and the corresponding secretary Rev. Samuel W. Dike of Auburndale, Mass.

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#### WEALTHIEST PERSONS IN THE UNITED STATES.

	Estimated wealth
John D. Rockefeller .....	\$800,000,000
Andrew Carnegie .....	400,000,000
William Rockefeller .....	300,000,000
Russell Sage .....	125,000,000
John Jacob Astor .....	90,000,000
Willis D. James .....	75,000,000
William Weightman .....	75,000,000
George F. Baker .....	50,000,000
A. G. Vanderbilt .....	45,000,000
Mrs. Hetty Green .....	35,000,000
Mrs. Sarah Van Rensselaer .....	12,000,000

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#### FOURTH OF JULY CASUALTIES IN 1903.

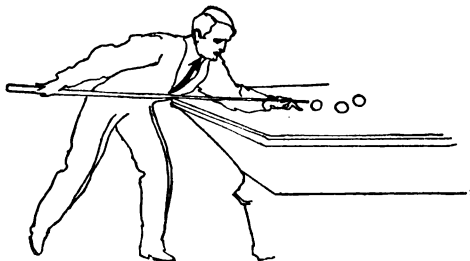
Died of lockjaw caused by injuries.....	406
Died of other injuries .....	60
Totally blinded .....	10
Number who lost one eye .....	75
Arms and legs lost .....	54
Number who lost fingers .....	174
Number of injured who recovered .....	3,983
Total number of casualties in the United States.....	4,349



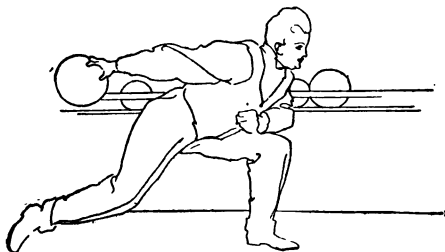
## Popular Amusements

### INDOOR SPORTS FOR THE HOME.

Indoor sports which combine fun, recreation and social intercourse with physical exercise are needed by every normal man to keep him in trim. Of these games, there are plenty which require a small amount of physical work and yet are suitable



for the home. Billiards and pool are good games to alternate with more active sports, but there is a greater amount of exercise to be derived from shuffleboard. This game consists of sliding iron disks over a shuffleboard and trying to "land" them in a



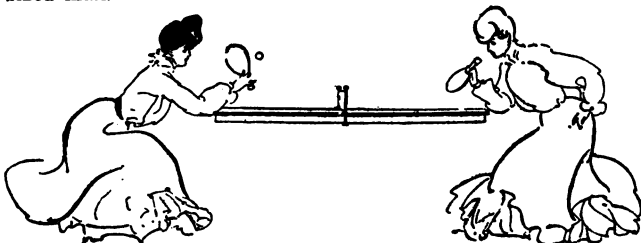
given line. The game is more enjoyable if the board is covered with canvas, to do away with the dust and noise. Bowling is an excellent mode of exercise, but the outfit required is rather an expensive one for most homes.

Indoor golf is a game in which any number may compete, and is quite amusing. A board 3 feet square with a hole cut in the center 6 inches in diameter, placed in the corner of a room at an angle of 45 degrees, forms the objective point. Rugs,



chairs, etc., are the hazards. The club to use is the mid iron or lofted, and of course only approach shots are possible.

Although ping-pong has diminished greatly in popularity, there is every reason why it should be retained among indoor sports, as it affords a great chance for physical activity. In order that the most beneficial results may be obtained, the room in which it is played should be a large one, with plenty of fresh, cool air. Other good indoor games which also afford exercise, are handball, squash, slow running, and rope skipping. For men, such combative sports as fencing, broadsword, sparring and wrestling are available sports, though fencing is rather hard to learn, and wrestling most too strenuous for a medium-sized man.



## GAMES FOR YOUNG AND OLD.

## HORRORS.

For this exciting game, the players are told to stand in a row along the center line of the parlor floor, and when this is done, all the lights are extinguished. The hostess then produces a basket, which she says is filled with the most awful objects. She tells the players that the horrors will be passed along the line, from hand to hand, and that anyone opening his eyes or making an exclamation of any kind will be put out of the game. Eyes are then ordered closed, and the mysterious objects begin to wend their way down the line. As a usual thing most of the players have to be banished from the ranks in short order, and only about a couple are left to be rewarded by some trivial prize. As to the horrors, a kid glove filled with mush and left on ice for half an hour, will produce about the same sensation as having a severed hand thrust into one's own in the dark; or a strip of narrow hose, plunged in ice water the minute before, will suggest a slimy snake. The hostess can use her own ingenuity in devising many other dreadful things.

## TELEGRAMS.

Ask each of your guests to suggest the first letter for each word that is to compose the telegram, after which let them take turns in making-up the messages to be sent. As an example, if the letters, M. A. T. P. D. P. R. are mentioned, the message may read: "Mary arrives to-morrow. Please don't plan reception."

## FOX.

Ring games are always enjoyed by the children, as they can generally be played by the little ones with help. In this game one of the child foxes stays outside the ring and shyly slaps the shoulder of one of the children. "Fox" runs to the left, the child to the right. They meet, and pass each other, going at full speed around the ring. The one who gets back to the "den" (the place in the ring where the child was standing) may hold that place, and the other must be the fox and try a race with some other child.

## THE GAME OF NUMBERS.

Each guest draws from a basket on the table a slip of paper bearing a number, and a half minute is allowed to give some old proverb, adage, fact or rhyme containing the number. If the player fails to respond within the time, a forfeit is required and afterward redeemed in some manner to entertain the company. To make the game more clear, suppose the number drawn is ten, then quickly follows, "Ten cents make one dime"; if number nine, "Of the muses of old, there were nine we are told"; if number two, "Two is company, three is none"; if num-

ber one, "One, two, buckle my shoe." It seems easy, but one must think quickly to give the required proverb, fact or whatever it may be in the time allowed.

### PROGRESSIVE CONVERSATION.

There should be no wall flowers in this game, where everyone is furnished with something to talk about. Each lady is provided with a card on which is a topic for conversation. At the ringing of a bell each man finds his partner and talks with her until the time is up, when he passes on to the next lady. After every man has conversed with every lady in the room, ballots are taken, the ladies voting for the men they found most entertaining, the men for the lady. The first prize is awarded to the person of each sex receiving the largest number of votes.

### BOOK REVIEWING.

Each guest writes an author's name on a slip of paper, which is folded over and passed to the one who sits next to her, who writes the title of a book; the paper is again folded and passed to another, who writes a criticism upon it. As many slips are made use of as there are participants in the game. When these papers are read, the jumble of authors, books and reviews is most amusing.

### MAGIC BRIDGE.

The magic bridge is another game popular with the children. For this they join hands and form a ring. If the number is large, there should be four "bridges" at the quarter points of the ring, these being numbered one, two, three and four—one opposite three, and two opposite four. The bridges are formed by two children who raise their joined hands for the others to pass under. The pianist leads with a bright, familiar air, and the children all follow the time, singing tra-la-la, tra-la-la, as they dance and skip along, keeping step to the music. They go one or more times around in a circle, the leader indicates where a "bridge" is to be made. Two children raise their joined hands, and the two children standing opposite in the ring cross the center of the circle. All the others following after, pass under the "bridge." Then turning to right and left respectively, the two lines follow the path of the circle as formed first, meet, join hands again and a new circle is formed. Another "bridge" appears as if by magic, and the children opposite it lead again through it, the while keeping the merry measure with song and dance. This is a good game to play when things begin to get a little quiet at a party, as it makes the children get up and jump around; in fact, children always prefer games in which there is need for activity to those which put a tax upon their mental capacity.

## *Etiquette*

### WHEN AND HOW TO CALL.

In the city, a woman pays her formal calls between 3 and half-past 5 o'clock in the afternoon. If a friend has a day "at home," it is better to call then if possible, though it is not improper to call at another time. In towns and country neighborhoods, calls are frequently made in the morning and evening and after church, or in the afternoon on Sunday. A man utilizes evenings and Sunday afternoons to pay his calls.

It is proper for brides and strangers to wait to receive the first call. When two women return to town after a summer vacation, and no indebtedness exists, the younger one would call first upon the older. An unmarried woman would call first upon a matron, however, unless the latter be decidedly her junior.

Veils, gloves and lighter wraps should not be removed when calling, though if the weather is bad, umbrellas, overshoes and raincoats should be left in the hall. A man never wears his overcoat into a lady's drawing room, and it is a rare thing for him to carry his cane or hat in either. At a regular "at home," women do not kiss in greeting, and retain their gloves when taking tea. A man in calling with a lady always waits for her to give the signal for departure.

### CARDS AND WEDDING INVITATIONS, 1905.

By Harriet Gillespie.

Fashion exacts from her votaries strict obedience to law, and in no one particular does she exercise her prerogative to a greater degree than in the correct usage of cards. Latitude such as she sometimes tolerates in the realm of feminine raiment has no place in this department of social observance, and the rules governing their usage are defined to a nicety.

A continuance of the custom of using the Roman or Old English style of lettering on the modish visiting card still obtains, exclusive society favoring the latter. The graceful, quaint form expressive of so much dignity and refinement, doubtless, is largely responsible for its continued popularity. The easy, flowing script is used to a moderate degree by conservative women, who are loath to depart from old customs or to be the first to follow after strange gods. One arbitrary rule, essential to good taste, is to the effect that but one style of lettering should be used on a card, and furthermore that a set of cards belonging to one family should be alike. Mongrel lettering should be as rigidly eschewed as an association of several styles of architecture. As the latter is considered the height of bad form, the former should be discouraged on the same ground.

Certain uniform sizes are prescribed for all cards except those intended for a specific purpose, and this by the best au-

thority in the country. A visiting card for a man should be  $1\frac{1}{2}$  by 3 inches; of a young woman, 2 by 3 inches; and of a married woman,  $2\frac{1}{4}$  by  $3\frac{1}{4}$  inches. Dinner, luncheon, tea, ball and reception cards vary in size according as taste and the amount of lettering dictate. Fashion now decrees that names, residence numbers, dates and time, also titles when used as prefixes, junior, etc., should be engraved in full. The important exception to this rule is in the case of the eldest married woman of the elder branch of the family, who may omit all Christian names on her card if the simpler form appeals more strongly to her.

The prefix "Mr." should always appear on a visiting card, but may be omitted on a business card. Clergymen occasionally drop their formal title in favor of plain "Mr." among intimate friends, but the idea does not generally obtain. The lower left-hand corner invariably indicates the club or society, if the man belong to such; the hospital, if a physician; the church, if a minister of the gospel. If it be a society women, the same space contains the reception day, and where the ordinary visiting card is utilized as an invitation to an informal function, as is often the case, the "at home," hours and character of the entertainment are designated. The lower right-hand corner invariably contains the address.

Under no consideration should a woman's card fail to carry the prefix. The card of a married woman should always carry her husband's name in full, together with her reception day and address. As the young woman is not supposed to have a different reception day from her mother, her card is innocent of this inscription.

The young debutante has little use for a special visiting card, for custom requires that her maiden calls be made exclusively with her mother, therefore her name, directly below that of her mother, will appear upon a special card bearing the reception day and address. The Christian name is omitted in case of the eldest daughter, while the names of the younger appear in full. Frequently the daughters' names combined are placed beneath that of the mother.

It is customary for a bride to have a special card engraved with her own and husband's name. No reception day is given, for the young people are supposed to visit together. Special cards are provided for such occasions. The use by a widow of her husband's name, while not legally acknowledged, is permissible, but not altogether advisable. Sentiment, however, often supersedes conventionality, and the empty symbol is retained for the sake of old memories.

When a married son is named for his father, complications are avoided if the Christian name of the mother be omitted entirely from her card. A funeral custom which has gained a conservative following is the sending of engraved cards expressing suitable sentiment to friends and acquaintances in acknowledgment of condolatory messages, flowers and the like, sent in the hour of affliction. Their use is confined principally

to cases where the decedent was a prominent personage, and even then personal replies are sent to intimate friends.

Surpassingly dainty and attractive are the diminutive bits of pasteboard that do duty as visiting cards for young girls and boys. The dignity of paying formal calls nowadays is by no means confined to the older members of the family, and cunning little cards 1 by 2 inches in size, engraved by black type with the prefix "Miss" or "Master," without the address or other lettering, represent the perfection of simplicity and good taste in this direction.

If it happens that a prospective bride and groom have a large circle of friends, occasionally betrothal announcements are sent out, which are handsomely engraved in Old English or Roman lettering, the conventional sheet being used.

The custom of sending out birth cards prevails to a great degree. A dainty slip of cardboard of minute proportions, engrossed with the infant's name, is tied to that of its parents by a pure white ribbon. Altogether it forms an attractive and interesting souvenir for the friends and relatives of the little newcomer.

The ordinary visiting card fills a multitude of offices in the invitation line. It not only does duty as a tea card, but is utilized for entertainments of a special character, when the word "music," "cards," "readings," etc., is used. In the event of an evening affair, the husband's name appears with that of his wife. An afternoon function of a more formal character will be announced by an engraved card sent out in the name of the hostess, with the word denoting the special character of the diversion offered in the lower left-hand corner.

If the hostess be assisted, the names of the receiving women or those for whom the affair is given will appear below. In another style of at home card, blank spaces are left for the name of the guest, hours and date to be inserted. These are especially desirable for a woman who entertains largely. Ultra luncheon, dinner and tea invitations are similarly engrossed, except that the hostess "requests your presence."

Invitations for balls are engraved on a generous sheet of paper and inclosed in two envelopes, the style of wording following that for formal dinners and receptions, but for the word "cotillion," "dancing," or whatever it may be, which occupies its usual place.

In the event of a formal ball given for charity or other object of a semi-public character, the invitation would state that "the pleasure of your company is requested," etc., with the name of the patronesses below. When given in honor of some distinguished guest, it is usual to precede the invitation with the form, "To meet the Hon. Frank W. Higgins, Governor of New York." Ordinarily the legend is placed either at the top or at the bottom of the regular reception form. Frequently a special card is engraved with a space for filling in the guest's name.

Very stately and dignified, both as regard type and wording—as properly befits such a solemn occasion—are the newest forms of wedding invitations. The parents of the bride-elect “request the honor” of your presence at the ceremony, and the “pleasure” of the same at the reception, if the ceremony be private, all of which is engraved in the graceful Old English, which fashion and good taste now pronounce the most elegant. Ultra-fashionable folk favor the form which omits the names of the contracting parties from the invitations proper, but includes the individual cards of the prospective bride and groom, similarly engraved. But in any event, whether the names be included in the regular form or inclosed separately, a blank space is left in which is inscribed the name of the person to whom the invitation is sent, a method which carries with it a gracious suggestion of personal interest, pleasing to the recipient, even though she be aware that fickle fashion alone prompts the formality.

#### DON'TS FOR THE TABLE.

Don't—

Put your elbows on the table.

Trifle with knives and forks.

Clink the glasses together.

Tuck the napkin in your waistcoat or collar.

Fold the napkin at conclusion of a meal.

Convey food to the mouth with the knife.

Mash food with the fork.

Hold knife and fork in the air while the plate is being replenished.

Place soiled knife or fork on table linen.

Allow spoon to stand in cup while drinking from it.

Blow on soup to reduce its temperature.

Drink from the end of a spoon.

Masticate the food noisily.

Converse with the mouth full.

Hold food in the air while conversing.

Bite mouthfuls of bread from a slice.

Precede the ladies to the table.

Use a toothpick at the table.

#### PREPARATIONS FOR A BIG DINNER.

First cover the table with heavy felting or double cotton flannel, and over this lay the damask dinner cloth, so placed that the central crease will divide the table in half. Place a large dolly in the middle of the table, and on this set the artistically arranged floral centerpiece with the candlesticks about it. Then dispose about the table a convenient number of decanters, pepper boxes and salt cellars and little dishes of bonbons and almonds. On each plate place a large white napkin, folded or ironed square, with a dinner roll between the folds. Three



silver forks are put, points of prongs up, to the left of the plate, and to the right two large knives and one small knife, sharp edges toward the plate; on this side also goes the large soup spoon, and next to it the oyster fork. Close to the tips of the knife blades set the glasses—a tumbler or goblet for water, and if wines are served glasses appropriate for the different kinds. On each napkin is placed a card bearing the name of the guest who is to have that particular seat.

The lady at the right of the host should be served first, and then each guest in regular order. Dishes should be served at the left of a person. Be sure that plates for hot courses are warmed or the dish will be spoiled. The host never carves at a very large dinner, as none of the dishes are set upon the table, the work of helping being left entirely to the servants. It is best not to have so many guests that the table will be crowded. The following is the menu for a rather elaborate dinner:

Oysters on the half shell  
Oxtail soup  
Young turkey    Cranberry jelly  
Chestnut boulettes    Baked tomatoes  
Mashed potatoes  
Olives    Salted nuts    Radishes  
Sweetbreads with Madeira in chafing-dish  
Lettuce salad with French dressing  
Cheese croquettes    Pastry strips  
Pumpkin fanchonettes  
Orange ice    Old-fashioned hickory nut cakes  
Black coffee  
Roasted chestnuts

#### ORIGIN OF TOASTS.

The proposal of a health in an after-dinner speech dates back to mediæval times. At that time the loving cup was used at every banquet. It was filled to the brim with wine and in the center was placed a piece of toasted bread. The cup circulated the table, each one present taking a sip of the wine. When it came back to the host he drained the remaining wine and ate the piece of toast in honor of all the friends assembled at his table.

The ancient Greeks, the Romans, the Assyrians and the Egyptians drank each other's health at dinner, but post-prandial oratory was not adopted until modern times. The Greek toast was, "I salute you, be happy"; that of the Romans, "I drink your health."

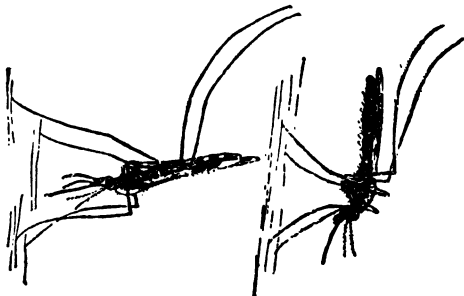
## Health

### DISEASES THROUGH MOSQUITOES.

Yellow fever is only transmitted from one person to another by means of mosquitoes. To this great discovery is due the fact that yellow fever is no longer a plague. It is prevented by stamping out the mosquito pest and by taking proper precautions against mosquitoes.

Malaria is also transmitted by one person to another only through the bite of the mosquito. These are two of the greatest hygienic discoveries of modern times.

There is only one single genus of mosquitoes that transmits malaria to human beings, and its name is *Anopheles*. The sparrow malaria is transferred by the genus *Culex*.



The mosquito on the left, standing parallel to the surface on which it rests, is harmless, whereas the noxious *Anopheles*, on the right, stands at right angles.

These two genera are easily distinguished, as mosquitoes of the genus *Anopheles* hold their bodies nearly at right angles to the surface upon which they are resting, as shown in the illustration, while *Culex* keeps its body nearly parallel.

It is only the female mosquito, however, that transmits the disease, the male being harmless. Steps should therefore be taken to check the propagation of these harm-doing insects. The stagnant pools and ponds where the eggs are deposited and which the larvae inhabit, should be drained wherever it is possible, but if it is not practical to drain the breeding places, the introduction of small fish into the pond will materially lessen the number of larvae. A thin film of kerosene over the surface of water will effectually destroy mosquito larvae. A small quantity of kerosene poured in an open cistern, tub or rain barrel will retard their breeding.

## YELLOW FEVER.

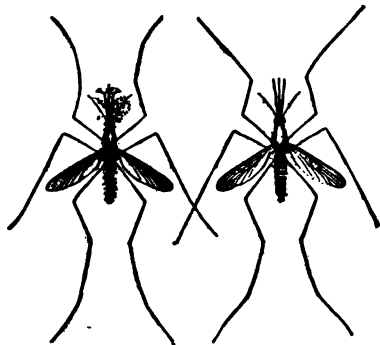
The way this disease is communicated by mosquitoes was discovered by Major Walter Reed of the United States army medical division, in Cuba, in 1900. He was born in Gloucester county, Va., September 13, 1851, died at Washington, D. C., November 23, 1902, and for this discovery ranks as one of the great benefactors of humanity. Havana is now one of the healthiest cities of the world, but prior to 1900 was ravaged by yellow fever almost yearly. Safeguarding against mosquitoes is eradicating yellow fever wherever the new method is thoroughly enforced. Lives without number, and wealth beyond measure are thus being saved. Reed's conclusions are:

1. The specific agent in the causation of yellow fever exists in the blood of a patient for the first three days of his attack, after which time he ceases to be a menace to the health of others.

2. A mosquito of a single species, *Stegomyia fasciata*, ingesting the blood of a patient during this infective period, is powerless to convey the disease to another person by its bite until about 12 days have elapsed, but can do so thereafter for an indefinite period, propagating the remainder of its life.

3. Yellow fever cannot in nature be spread in any other way than by the bite of the previously infected *Stegomyia*.

4. Articles used and soiled by patients do not carry infection and need not be destroyed.

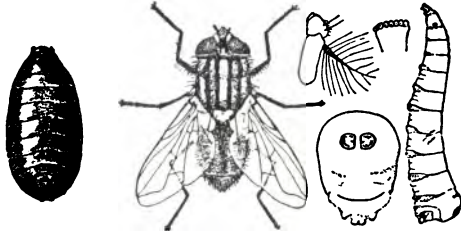


On the left the harmless male *Anopheles*, on the right the dangerous female.

## OUR ENEMY, THE HOUSE FLY.

The little house fly is a dangerous enemy to human life, as it has the ability to gather upon its tongue and carry from any moist substance a great many pathogenic germs, which it deposits on food, in milk jug or wherever it happens to alight. It has been found that wherever excrement is not properly cared for, the house fly carries virulent typhoid germs and transmits them to food substances in the house.

The typhoid germs may be found in excreta for some time



Common house fly, with puparium on the left and larva on the right.

before the character of the fever can be recognized, and also quite a while after the patient has recovered. As it is known definitely that the house fly breeds in this substance, it is surprising that typhoid is not more prevalent than it is, when we consider the great numbers in which the fly swarms in so many kitchens and dining rooms. In the transfer of all other bacterial intestinal diseases of human beings, the house fly must be an important agent, also.



Tongue of the house fly, magnified over 40 diameters.

A great effort should be made to decrease the numbers of this insect by trying to stop its breeding. Manure piles, where the majority breed, should be kept either in a vault or closet, and chloride of lime should be thrown over them with each day's additions to the pile. Some such measure as this should, in towns and cities, be enforced by the board of health.

## PRECAUTION AGAINST TUBERCULAR INFECTION.

[From "The Great White Plague," by Dr. John B. Huber, Popular Science Monthly for August, 1904.]

To-day every third or fourth adult dies of consumption. In the periods between birth and senescence every seventh death is caused by it.

The tubercle bacillus gets into the body either with the air we breathe, or with tuberculous foodstuffs, or rarely through wounds. Wherever it implants itself an inflammation may occur about it, with the result that a tubercle is formed (tuber is Latin for root or bulb). This tubercle is in size from that of a millet seed to a hickory nut or larger. Its development is called tuberculosis. Under favorable circumstances it becomes surrounded by fibrous tissue, somewhat like the scar which would follow a wound of the skin; and then the tubercle will be comparatively harmless to the organism.

Besides these predispositions to tuberculosis, there are many others. There are the family relations. If one member is consumptive, his sputum may in various ways be infected. It may be spat upon the floor, and if there is an infant, it will, in playing about, pick up bacillus-laden objects, and, after the habit of infants, put them into its mouth. Then, after weeks or months the child becomes tuberculous. So that on such accounts as these it was formerly considered that the disease itself was of hereditary origin. Then "neglected colds," fevers and exhausting diseases, such as typhoid or malaria, enervate the body and make it a fruitful soil for microbic germination. Direct injury, or open wounds, or the shock occasioned by injury, or depressing emotions generally, may predispose. There are many trades which may stand in a causative relation to tuberculosis. In the excellent book entitled "Dangerous Trades," there are nearly 60 such occupations specifically considered.

The sputum of the consumptive must be destroyed; and our government inspectors must see to it that no tuberculous meat and milk get into our markets. These are practically the only sources of tubercular infection we need fear, and if these were thoroughly attended to, there would be no danger of infection.

## NECESSITY OF CHEWING THE FOOD.

If the food is correctly chewed, it has been found by actual tests that a man can live on about one-third as much as is usually consumed in a day by one person. The diet must be made up of the simplest food, but much time must be consumed in chewing, 30 movements of the jaw not being too many for such easily swallowed things as raw oysters.

By thus thoroughly chewing, the food is made so digestible from the chemical action of the juices of the mouth, that when it reaches the stomach it is ready to perform its various functions in renewing the body. Not so with unchewed food, which

reaches the stomach in lumps, and causes the stomach to over-work in order to pass it into the intestines. Sometimes, also, when too much unchewed food has been swallowed at a meal, the lumps pass into and clog up the intestines, and fermentation and decay soon set in.

One finds after a few months of simple living that all superfluous flesh soon passes off without any loss of physical strength. On the contrary, exercises which cause fatigue to the heavy feeder can be taken without any after effects.

The more the food is chewed, the less one eats and the more one craves simple things. Besides, more pleasure is to be had from eating, as the full flavor of the food is tasted, and a good digestion is the reward for the time it takes.

### TO DEVELOP THE BODY.

Some sort of exercise should be taken by everyone, either upon rising in the morning or retiring at night, and what is more, it should be done methodically, and the proper forms gone through.

The following are a few exercises for the principal parts of the body, suggested by a teacher of physical culture:

**Neck**—Bend the head slowly forward and backward, and from side to side. If a harder exercise is desired, resist the movement of the head by pushing in the opposite direction with the hands. This will fill up the hollows in the neck.

**Upper Arm (biceps)**—Curl dumbbells. That is, drop the arms full length at the side and curl the bells up to the shoulder. "Chinning," if one has a convenient place, is a splendid exercise. A low branch of a tree in the garden will do nicely. Reach up and grasp the limb with both hands, the backs of the hands toward you, and try to pull yourself up until your chin is on a level with your hands.

**Forearm**—Open and shut the hand—squeeze a rubber ball; or a sheet of newspaper made into a ball will do.

**Chest**—To broaden the chest, swing your dumbbells shoulder high in front of you, and, keeping them shoulder high, swing arms as if to try and touch the hands in back. To deepen the chest and develop the shoulder muscle (deltoid), take the dumbbells in either hand at the side and raise the arms shoulder high. Above all, for the chest, take long, deep breaths.

**Bust**—Bend the body forward, bend your arm and swing both dumbbells, in one hand, close in front of you—directly across the body. To make sure you are doing this correctly, place the uncoupled hand directly above the bust (over the pectoral muscles) and experiment until you can feel the muscle work properly.

**Waist**—To keep the waist line down, place hands on hips and slowly bend the body far forward and then backward (keep the head up), and then bend from right to left.

**Hips**—To develop, swing leg to the side and forward and backward.

**Thigh**—With back straight, heels together, bend knees, rising on your toes as you do so, and sink down until your hips touch your heels; rise quickly to correct position. Great care must be taken not to bend forward in the least, or the value of this exercise will be lost. Lifting knee to the chin is also a good exercise.

**Calf**—Rising on toes and then heels.

**Abdomen**—To decrease flesh; lie on the floor, placing hands under hips and with feet together, legs straight, raise legs over head. Repeat, raising them again just before the feet reach the floor.

### RULES FOR A HYGIENIC BED.

The bed should be placed well away from the windows, where no draft can strike the sleeper, as it is quite as injurious to sleep in a draft as it is in a room with no ventilation whatever. If it is impossible to have the windows open without a draft screens should be provided as a protection against it. A metal bedstead is more readily cleansed and therefore preferable to wood.

The sheets and blankets should be of generous size, and one should have a light comforter or extra blanket for cold nights. Do not sleep under the counterpane, as it is unhealthy to do so. Avoid too much bedclothing, as that is the cause of much of that tired feeling which many people complain of after a night's repose. It is a good plan, for those suffering from rheumatism particularly, to have an old blanket for the under sheet, and also a slip cover for the pillows under the ordinary case.

Much attention should be paid to the proper airing of beds. The bedclothing should be entirely removed every morning, and exposed to the air and sun. The best plan of all is to put bedclothing, pillows and even the mattresses, right out on the line, so that all odors may be easily blown away. At least an hour should elapse after rising before the bed is remade. The bedroom windows should remain open as much of the day as possible and always at night.

### PREPARATIONS FOR HOSPITAL TREATMENT.

Address all communications to the Resident Physician of the hospital to which admission is desired. Applications for admission are best made through a local physician. Take no luggage larger than a suit case. Place hair brush and comb, tooth brush, soap, manicure articles, hand mirror, writing materials, stamps and telegram blanks in compact boxes which can be put in the small table drawer allowed each patient.

Provide no underclothing unless arrangements are made for laundry work to be done outside the hospital and without the supervision of the nurses.

Dressing gowns in full length and slippers are the only clothing needed in the wards and these are provided when desired.

Street clothes are stored with regard to economizing space. It is a good plan to have them sent when the patient is discharged.

No line of work is more exacting than that of nurses in training. They seldom fail to attend to actual needs, but they have no time to listen to grievances. Their routine duties will not often permit them to write letters, and errands outside the hospital cannot be done by them.

Make yourself ready to believe that the wisest treatment will be given your case. Your personal views are not to be matched against those of physicians and nurses.

Telephoning concerning a patient in a large hospital is only allowable in dangerous cases, and all communications are best carried on through the medium of the visiting hour.

Don't believe your own case to be the worst in the hospital and that it demands the most attention.

Resolve to be cheerful; there are social duties and crimes in hospitals as elsewhere.

Go with the single thought of getting well and make any sacrifice to bring about this result in the shortest possible time.

#### QUICK REMEDIES FOR THE NURSERY AND THE HOME.

By a Physician Whose Specialty Is the Treatment of Children's Diseases.

**Nosebleed**—Saturate absorbent cotton with witch hazel, strong tea, alum water or salt water, and plug the nose. Soak the feet in hot water. Sometimes a clothespin put tightly on the nose will stop the bleeding.

**Pink Eye**—Lay a poultice of grated raw potato in fine gauze on the sore eye and have the patient lie still in a dark room for several hours. Bathe with witch hazel. Burn everything that has touched the eyes, as the discharge from pink eye is infectious.

**Chilblains**—Apply camphorated oil or equal parts of spirits of turpentine and ichthyol.

**Chafing**—Wash the sore places with castile soap, dry thoroughly and dust with buckwheat flour or a good baby powder.

**Infantile Convulsions**—Hot baths and mustard water for the feet. Bathe the spine with cold water; warm water on the head.

**Whooping Cough**—For a hard attack, fill the room with cresolene vapor; an emetic of powdered alum in honey is helpful. Hold the child on its stomach on nurse's lap with its head lowered till the emetic works. Spray the throat several times a day with one teaspoon of listerine in two ounces of water.



**Croup**—Make the room at temperature of 80, fill with steam of boiling vinegar. Bathe child in hot water till he sweats. Put compress on throat, wrung out of cold water and vinegar. Give ipecac if fever subsides but cough continues.

**Earache**—Give hot foot baths and apply to the ear a hop bag wrung out of hot water, a bran or salt bag heated in the oven, or put the heart of a roasted onion in the outer ear. One part of menthol in 20 parts of oil of sweet almonds often gives instant relief when dropped in the ear.

**Foreign Substances in the Ear**—Put the pipe of a tightly working syringe in the ear, then draw back the piston. The foreign substance will be sucked out.

**Fainting**—Lay the patient on the back with head lower than the heart, loosen the clothes, dash cold water in the face, slap the chest over the heart and apply ammonia to the nose.

**Blistered Feet**—Mix the tallow dropped from a candle with alcohol and rub the blistered spot gently, or moisten the blister and rub with baking soda.

**Ivy Poisoning**—Bathe the affected parts with water as hot as can be borne, then with sugar of lead dissolved in water.

**Burns and Scalds**—Exclude air at once from the burned surface. Sprinkle bicarbonate of soda over the burn, then wrap the part in moist gauze and a layer of absorbent cotton held securely in place by a bandage. If blisters form, soak lint in a mixture of equal parts of lime water and olive oil and keep in place by a bandage. Change the soaked bandages frequently.

**Choking**—Pick child up by its feet, hold it head down for a few seconds, and administer a few sharp blows between the shoulders.

**Swallowing Coins, Buttons, Etc.**—Follow the act as soon as possible with a dose of castor oil.

**Foreign Bodies in the Nose**—If the obstruction cannot be hooked out with a hairpin or glove buttoner, give the child a pinch of snuff to induce sneezing.

**Foreign Matter in the Eye**—Lift the lid, find the foreign substance, and wipe it off with the corner of a soft handkerchief or with a toothpick if imbedded inside the lid.

**Sunstroke**—Lay the patient down with head and shoulders up and put an ice bag on the head. Sponge the body with ice water.

**Colic**—Give dry, hot fomentations and rub the abdomen. Hot peppermint tea will frequently give relief.

**Diarrhea**—Apply warmth to the bowels and wrap the body in flannel. Give a dose of castor oil.

**Thrush**—Each time the baby feeds, wash its mouth with a solution of warm water and borax. Or, wash the baby's mouth once in two hours with one dram of borax dissolved in one ounce of strained honey.

**Growing Pains**—Wring a towel from strong cold salt water

and wrap about the aching limb. Make the child lie down, then swathe the bandaged leg in dry, warm flannels.

**Sprains**—Make the patient lie level and take entire rest until a physician can be called. Bathe with hot water. A lotion of lead water and laudanum will reduce the pain and swelling.

### HOW TO SLEEP.

Do not expose yourself to a draft when retiring, or while sleeping.

Do not go to bed in a room where lamp or gas has been burning for hours. Put out light, throw open the windows as wide as possible, and get the pure oxygen before retiring. Then leave the window so that there is a circulation of good air all night long.

The less nightclothing worn to bed, the better. Also avoid overloading the body with bedclothing.

No one should sleep in a room that has not at least one window open.

Go to bed at a regular, early hour, not later than 10, and get up as soon as you awake in the morning, or at least avoid taking a second nap.

A hot bath before going to bed will induce almost instantaneous sleep upon retiring.

Sleep with the body as nearly horizontal as possible. Most persons sleep on the right side, though there are physicians who say that one should lie on the left side with the arm thrown behind. Sleeping on the back is not recommended.

### TO KEEP YOUNG.

[From Success.]

Expect a good, long, useful life.

Hold young thoughts persistently.

Simply refuse to grow old by counting your years or anticipating old age.

Keep in the sunlight; nothing beautiful or sweet grows or ripens in the darkness.

Avoid excesses of all kinds; they are injurious. The long life must be a temperate, regular life.

Never look on the dark side; take sunny views of everything; a sunny thought drives away the shadows.

Be a child; live simply and naturally, and keep clear of entangling alliances and complications of all kinds.

Don't live to eat, but eat to live. Many of our ills are due to overeating, to eating the wrong things, and to irregular eating.

Don't let anything interfere with your regular hours of work and rest, but get plenty of sleep, especially what is called "beauty sleep," before midnight.

Keep busy; idleness is a great friend of age, but an enemy of youth. Regular employment and mental occupation are marvellous youth preservers.

Take regular exercise in the open air every day in all weathers; walk, ride, row, swim or play; but whatever you do, keep out of doors as much as possible.

**NOISE AND HEALTH.**

A noted physician has recently made the statement that noise has a decidedly injurious effect upon the health of individuals and demands attention from the sanitary officers in cities and towns. Of course a certain number of noises are necessary in connection with public utilities, but these, he thinks, could be reduced in number, as for instance, by doing away with flat-wheeled cars and some other noise nuisances.

**HIGHT AND WEIGHT OF MEN.**

[According to Life Association Records.]

Hight	Pounds	Hight	Pounds
5 ft	120 to 134	5 ft 8 in.	146 to 163
5 ft 1 in.	122 to 136	5 ft 9 in.	150 to 168
5 ft 2 in.	124 to 138	5 ft 10 in.	154 to 174
5 ft 3 in.	127 to 141	5 ft 11 in.	159 to 180
5 ft 4 in.	131 to 145	6 ft	165 to 185
5 ft 5 in.	134 to 149	6 ft 1 in.	170 to 189
5 ft 6 in.	138 to 153	6 ft 2 in.	176 to 196
5 ft 7 in.	142 to 158	6 ft 3 in.	181 to 204

**HIGHT AND WEIGHT OF WOMEN.**

[Life Association Records.]

Hight	Pounds	Hight	Pounds
5 ft	98 to 132	5 ft 7 in.	123 to 167
5 ft 1 in.	102 to 138	5 ft 8 in.	126 to 170
5 ft 2 in.	106 to 144	5 ft 9 in.	131 to 179
5 ft 3 in.	111 to 150	5 ft 10 in.	136 to 184
5 ft 4 in.	115 to 155	5 ft 11 in.	128 to 190
5 ft 5 in.	119 to 161	6 ft	141 to 196
5 ft 6 in.	121 to 165		

Long livers are small eaters.

The strongest animals in the world are those that live on a vegetable diet.

## *Miscellaneous*

### TO BUILD A HOUSE WAGON.

A vacation spent in a house on wheels should be unique enough to suit the most novelty-craving person. Of course if one is to take such a trip, the house must first of all be rain-proof. Buy a light two-horse farm wagon with springs between the bed and the running gear (it will cost about \$50), and over



**A House on Wheels.**

each side, above the wheels, fasten woven wire cots. Over all this, both cots and wagon, build a tent of canvas (so that when the day's trip is done, the end curtain can be let down, the lamp and gasoline stove lighted and the privacy of a home enjoyed). Of course in fine weather meats, etc., can be roasted over a wood fire built under the trees. The cots must be fastened to the sides of the wagon, either with bolts or staples, in such a manner that they can be easily taken down. The outside

legs of the cots are fastened to the ends of two light pieces of timber which run underneath the bed of the wagon—one before and the other behind the rear wheels. These are held in place by iron straps looped around them, and can easily be pulled out and packed with the cots in the wagon, when one is traveling over narrow mountain roads. The frame for the wagon cover should be of sufficient height to allow of standing room underneath, and should be covered with eight-ounce canvas. In the accompanying illustration the canvas lean-tos, which covered the cots, were constructed with walls about 2 feet in height, and these were held in place by light rods braced on the inside of the canvas. Lightness and strength must be the keynote of your building, for there will be many long mountain grades to climb and sandy spots to pull through.

### COMMON ERRORS.

It is a mistake to labor when one is not in a fit condition to do so.

To think that the more a person eats the healthier he will become.

To go to bed at midnight and rise at daybreak and imagine that every hour taken from sleep is an hour gained.

To imagine that if a little work or exercise is good, violent or prolonged exercise is better.

To conclude that the smallest room in the house is large enough to sleep in.

To eat as if you only had a minute to finish a meal in, or to eat without an appetite, or continue after it has been satisfied merely to satisfy the taste.

To believe that children can do as much work as grown people and that the more hours they study the more they learn.

To take off proper clothing out of season, simply because they have become heated.

### WORDS OFTEN MISUSED.

Alapaca, a popular error for alpaca.

Allow, often used in the sense of think, or believe.

Any place, used erroneously for anywhere.

Avocation, used when vocation is meant.

Balance, should be only used as an accountant's term.

Banister, for balustrade.

Calculate, for intend.

Corporal punishment, not corporeal.

Claim, for assert.

Expect, for intend, believe and suppose.

Fix, for arrange.

Folks, for people.

Jewelry, for jewels.

## WEDDING DAY SUPERSTITIONS.

If a bride wear a yellow garter tied by a girl friend, the latter will be married inside the year.

Three times a bridesmaid, never a bride.

It is a sign of ill luck to take off the wedding ring.

If the bride just before leaving the house throws her bouquet over the banisters, the one who catches it is next to be wedded.

The wedding day is the bride's day, and the weather foretells her married life. The following is the bridegroom's, and his married life is shown in the same manner. The third day shows how they will live together.

Old slippers or rice must be thrown after a bride for good luck.

Wednesday is the luckiest day on which to be married. Saturday is the unluckiest. Friday is also unlucky.

A double wedding is unlucky; one of the marriages will prove unhappy.

A bride must not look in the glass after her toilet is complete, i. e., she must add a glove or some article after leaving the mirror.

The bride should wear

Something old,  
Something new,  
Something borrowed,  
And something blue.

## THE WEDDING ANNIVERSARY.

At end of first year comes the Cotton wedding.

2d year—Paper wedding.

3d year—Leather wedding.

5th year—Wooden wedding.

7th year—Woolen wedding.

10th year—Tin wedding.

12th year—Silk and Fine Linen wedding.

15th year—Crystal wedding.

20th year—China wedding.

25th year—Silver wedding.

30th year—Pearl wedding.

40th year—Ruby wedding.

50th year—Golden wedding.

75th year—Diamond wedding.

## GEMS AND FLOWERS FOR THE MONTH.

January—Garnet and snow-drop.

February—Amethyst and primrose.

March—Bloodstone and violet.

April—Diamond and daisy.

May—Emerald and hawthorn.

June—Moss agate and rose.

July—Ruby and water lily.

August—Sardonyx and poppy.

September—Sapphire and goldenrod.

October—Opal and hops.

November—Topaz and chrysanthemum.

December—Turquoise and holly.

LANGUAGE OF GEMS.

Amethyst—Peace of mind.	Turquoise—Success and happiness.
Diamond—Pride.	Garnet—Fidelity in every engagement.
Emerald—Success in love.	Onyx—Reciprocal love.
Ruby—A cheerful mind.	Opal—Pure thoughts
Sapphire—Chastity.	
Topaz—Fidelity.	
Pearl—Purity.	

STATE FLOWERS.

Alabama .....	*Sunflower	Nebraska .....	*Goldenrod
Arkansas .....	†Apple Blossom	New York .....	*Rose
California .....	†Golden Poppy	North Dakota .....	*Goldenrod
Colorado..	*Colorado Columbine	Oklahoma Territory..	*Mistletoe
Delaware ....	*Peach Blossom	Oregon .....	*Oregon Grape
Idaho .....	Syringa	Rhode Island .....	*Violet
Indiana .....	*Corn	Texas .....	†Blue Bonnet
Iowa .....	*Wild Rose	Utah .....	*Sego Lily
Kansas .....	†Sunflower	Vermont .....	*Red Clover
Louisiana .....	†Magnolia	Washington .....	†Rhododendron
Maine ..	*Pine Cone and Tassel	West Virginia .....	*Rhododendron Max.
Michigan .....	*Apple Blossom	Wyoming .....	*Gentian
Minnesota .....	*Moccasin	*Chosen by school children.	
Mississippi .....	*Magnolia	†Chosen by state legislature.	
Missouri .....	*Goldenrod	†Chosen by women's clubs.	
Montana .....	*Bitter Root		

POPULAR NAMES OF CITIES.

Baltimore—Monumental City.	New Haven—City of Elms.
Boston—City of Notions; Hub of the Universe.	New Orleans—Crescent City.
Brooklyn—City of Churches.	New York—Empire City.
Chicago—Garden City; also, Windy City.	Philadelphia—City of Brotherly Love; also, Quaker City.
Cincinnati—Queen City.	Pittsburg, Pa.—Iron City; also, Smoky City.
Cleveland—Forest City.	Portland, Me.—Forest City.
Detroit—City of the Straits.	Rochester, N. Y.—Flour City.
Hannibal, Mo.—Bluff City.	St. Louis—Mound City.
Indianapolis—Railroad City.	Springfield, Mass.—City of Homes.
Keokuk, Ia.—Gate City.	Springfield, O.—Flower City.
Louisville, Ky.—Falls City.	Washington—City of Magnificent Distances.
Lowell, Mass.—City of Spindles.	
Nashville, Tenn.—City of Rocks.	

The first fire engine used in America was sent from England in 1751.

The fastest rate at which a swallow has ever been timed to fly is 128½ miles an hour.

## WOMEN'S EXCHANGES.

Bureaus for the buying and selling of needlework, preserves, wines, pickles, cake, hand-painted articles and burned leather and wood, now exist in 18 states. Information concerning these may be obtained from the secretaries of the respective organizations. At Christmas and Easter special sales are held, and at this time articles for gifts are most in demand. With many of the exchanges there are employment agencies, where an effort is made to provide work for all classes of women workers. Those in charge report that there is the greatest demand for women in domestic service. There is also a steady call for dressmakers, nurses, copyists, saleswomen, shampooers and housekeepers. Below is given a state directory of women's exchanges:

**CALIFORNIA.**

Oakland, 534 14th St.  
San Francisco, 26 Post St.  
San Jose, 31 South 2d St.  
Santa Barbara, 729 State St.

**CONNECTICUT.**

Bridgeport, 187 Fairfield Ave.  
Hartford, 73 Pearl St.  
New Haven, 151 Orange St.

**DISTRICT OF COLUMBIA.**  
Washington, 811 Vermont Ave.

**GEORGIA.**

Atlanta, 158 Whitehall St.  
Macon, Cotton Ave.

**ILLINOIS.**

Chicago, 34 Washington St.

**IOWA.**

Des Moines, 516 Walnut St.

**MAINE.**

Augusta.  
Lewiston, 184 Bates St.

**MASSACHUSETTS.**

Boston, Women's Educational  
and Industrial Union, 264  
Boylston St.

**MISSOURI.**

St. Louis, 510 No. Grand Ave.

**NEW JERSEY.**

East Orange, the Women's Ex-  
change of the Oranges, 531  
Main St.

Englewood, Engle St.  
New Brunswick, 185 Neilson St.

Passaic, 22 Bloomfield Ave.  
Plainfield, 502 Watchung Ave.  
Trenton, 17 South Warren St.

**NEW HAMPSHIRE.**

Portsmouth, Women's Educa-  
tional and Industrial Union,  
52 State St.

**NEW YORK.**

Brooklyn, Schermerhorn St.  
and Flatbush Ave.  
Buffalo, 1094 Main St.  
Dunkirk, 413 Swan St.  
Hornellsville, 196 Main St.  
Newburg, 150 Liberty St.  
New York City, 334 Madison  
Ave.

Poughkeepsie, 352 Main St.  
Utica, 241 Genesee St.

**OHIO.**

Cincinnati, 438 Race St.

**PENNSYLVANIA.**

Erie, 702 French St.  
Philadelphia, 13th and Walnut  
Sts.

Pittsburg, 412 Penn Ave.

**RHODE ISLAND.**

Newport, 24 Washington Sq.  
Providence, 38 Dorrance St.

**TEXAS.**

Houston, 706 Main St.

**VIRGINIA.**

Richmond, 300 E. Franklin St.

**WASHINGTON.**

Spokane, 507 Sprague Ave.



## PATRIOTIC WOMEN'S SOCIETIES.

[Some of the more prominent ones.]

Colonial Dames of America (national and separate state organizations).

Daughters of the American Revolution.

Daughters of the Revolution.

United States Daughters of 1812.

Daughters of the Holland Dames.

The American Historical Red Cross.

United Daughters of the Confederacy.

Woman's Relief Corps.

Mt. Vernon Ladies' Association.

## WHERE WOMEN VOTE.

The legislature of New York in 1901 passed a law providing that "a woman who possesses the qualifications to vote for village or town officers, except the qualification of sex, who is the owner of property in the village assessed upon the last preceding assessment roll thereof, is entitled to vote upon a proposition to raise money by tax or assessment."

In Colorado, Idaho, Utah and Wyoming, women have full suffrage and vote for all officers, including presidential electors.

In Indiana, women may hold any office under the school laws, but cannot vote for any such officer. In Kansas, women exercise the suffrage largely in municipal elections.

In some form, mainly as to taxation or the selection of school officers, woman suffrage exists in a limited way in Arizona, Connecticut, Delaware, Illinois, Iowa, Kentucky, Massachusetts, Michigan, Minnesota, Montana, Nebraska, New Hampshire, New Jersey, New York, North Dakota, Ohio, Oklahoma, Oregon, South Dakota, Texas, Vermont, Washington and Wisconsin.

## WRITING FOR PUBLICATION.

Have something to say.

Consider how many it will interest.

Be sure it is worth saying.

Say it in the fewest possible words.

Then try saying it in less.

Let your theories go unstated; most people have more of their own than they can manage.

Write with black ink on one side of the paper.

Number your pages.

Put your name and address on each sheet.

Do not fold more than once.

Don't send your work the hour you finish writing. Read it over a week later.

## IN WRITING LETTERS.

Write distinctly, with especial attention to names.

Unruled paper is considered better taste.

When expecting reply, send stamp for return postage.

Colored inks or lead pencils are not desirable.

Business letters should be direct, and as brief as is consistent with clearness.

Letters of friendship should be written in an easy, natural manner, without set phrases, but with care and tact.

Letters which accompany gifts should be brief and simple.

In letters expressing sympathy for misfortune, the writer should strive to realize the state of mind of the sufferer, and should strive at least not to chill or aggravate the recipient. Brevity is desirable in most cases.

## THE USE OF CAPITALS.

1. Every entire sentence should begin with a capital.

2. Proper names and adjectives derived from these should begin with a capital.

3. All appellations of the Deity should begin with a capital.

4. Official and honorary titles should begin with a capital.

5. Every line of poetry should begin with a capital.

6. Titles of books and the heads of their chapters and divisions are printed in capitals.

7. The pronoun I and the exclamation O are always capitals.

8. The days of the week and the months of the year begin with capitals.

9. Every quotation should begin with a capital letter.

10. Names of religious denominations begin with capitals.

11. In preparing accounts, each item should begin with a capital.

12. Any word of very special importance may begin with a capital.

## AMERICAN TITLES.

Archbishop .....Most Rev.  
Bishop .....Rt. Rev.  
Doctor of Divinity.....D. D.  
A minister, rector, priest or  
rabbi .....Rev.  
Doctor of Laws.....LL. D.  
Physician or surgeon.....

M. D. or Dr.  
Dentist, Dr., D.D.S., or D.M.D.  
General .....Gen.  
Lieutenant-General.Lieut-Gen.  
Colonel .....Col.  
Admiral .....Adm.  
Commodore .....Com.  
Captain .....Capt.  
Professors in colleges or seminaries, eminent teachers of science or the classics, distinguished scholars or scientists .....Prof.

Officers of the United States civil service, members of legal profession, aldermen, magistrates, etc.....Esq.  
Men of all conditions and classes .....Mr.

The President of the United States, governors of states and ministers to foreign countries are alluded to as "His Excellency."

The Vice-president of the United States, members of the Cabinet and members of Congress, heads of departments, assistant secretaries, comptrollers and auditors of the treasury, clerks of the Senate and House of Representatives, state senators, law judges, mayors of cities, etc., are addressed, "Honorable," or "Hon."

## **Laundry Work**

### **EQUIPMENT FOR THE LAUNDRY.**

The completely furnished laundry has set tubs, clothes boiler (tin or copper), clothesline, washboard, clothespins, clothes basket or pail, water pail, scrubbing brushes, saucepan for starch, spoon for starch, strainer for starch, agate pan for starching, heavy cloth for tubs and boiler, clothes horse, duster for lines, bosom board, skirt board, sleeve board, small pointed irons, heavy irons, iron holders, flannel, iron rest, wax, polishing iron, heavy paper, small pieces of muslin and cheesecloth, ironing table covered with canton flannel, or coarse blanket and fine cotton cloth.

### **THE ROUTINE OF WASHING.**

Wash the clothes first on the right side, then on the wrong side, after which rinse in clear water. Soap the clothes all over and place in a boiler with cold water, adding a few pieces of soap to make a suds, boil five minutes, or longer if necessary, then give two more rinsings in cold water before bluing. Open the clothes well before putting in the bluing, so that they will not be streaked. The water should be well stirred every time the clothes are added, as the indigo settles at the bottom. After bluing, wring the clothes and starch them, the thickness of the starch depending upon the articles. Next hang in the open air, being sure that the lines are perfectly clean and also the pins. The line should always be taken down and put away after the clothes are taken in. When the clothes are dry, they should be stretched and folded, and before ironing should be sprinkled, rolled and allowed to stand an hour or so. Have the irons of various sizes; heavy ones for table and bed linen, small ones with points for small clothing, and polishing irons for cuffs. If the irons are rusty, rub while warm with beeswax and then rub quickly with a cloth. Irons should always be kept in a dry place.

### **STAINS.**

To remove blood stains from clothing, wash in cold water until the stain turns brown, then rub with naphtha soap and soak in warm water.

For brass stains, rub either lard or olive oil on stain, then wash in warm water.

Chocolate and tea stains are removed by sprinkling with borax and soaking in cold water first, and then rinsing in boiling water.

For coffee stains, spread stained part over a bowl, pouring boiling water on it from a height so as to strike the stain with force.

For glue, apply vinegar with a cloth until stain is removed.

For fruit stain, use Javelle solution and boiling water in equal quantities and immerse stained portion.

For grass, wash in naphtha soap and warm water. If color may be affected, use molasses or a paste of soap and cooking soda; spread on and allow to stand for several hours.

For indigo stain, wash in boiling water.

For ink, place stained portion in milk and allow to stand. If stain is dry and well set, cover with salt and lemon juice.

For iodine stain, let stand in ether or chloroform until iodine is dissolved and disappears.

For iron, spread stained portion over bowl containing 1 quart water and 1 teaspoon borax. Apply hydrochloric acid, drop by drop, until stain brightens, then dip stain at once into water.

For mildew stains, put on lemon juice and let stand in sunlight.

For milk or cream, wash in cold water, then follow with soap.

For paint, rub with benzine or turpentine.

For wine stains, put thick layer of salt on stain as soon as made, then pour on boiling water.

#### USEFUL HINTS.

Colored clothes, instead of being soaked, should be rinsed in water containing salt or vinegar. This may set the color before washing. Use little soap and wash as quickly as possible in clear water. Do not boil colored clothes. Underwear and stockings are pressed off after drying. Blankets may be stretched in curtain stretchers to dry instead of being hung. For black waists, the starch may be darkened with  $\frac{1}{2}$  cup coffee solution, reducing the boiling water that much. Blue waists may have blue water added to starch. Lace handkerchiefs should be washed and partly dried, then put in the hot starch and wrung out then clapped and ironed. For starching shirt bosoms, cuffs, collars and front plaits, use 5 tablespoons of starch instead of  $\frac{1}{2}$  as used for the body.

## *Household Helps*

### EXTERMINATING HOUSEHOLD PESTS.

To prevent moths, garments to be laid away during the summer should be thoroughly aired and brushed, so as to remove all eggs and larvae. If the clothes are hung in a closet, that should be thoroughly cleaned and if necessary the cracks in the floor and baseboards sprayed with benzine. Such repellents as tobacco, camphor, naphthaline cones or balls and cedar chips or shavings, will all aid in warding off the moths, but will not destroy eggs or larvae already in the garments. Fine dresses and furs should be wrapped in many layers of paper and inclosed in cotton, linen or even paper bags. The simplest and easiest method is to procure large pasteboard boxes, fill them with garments and seal the crack around the lid with gummed paper.

For cockroaches, mix equal parts of dry flour and plaster of paris, stirring in a little pulverized sugar; spread it on a plate or shallow basin or pan and set on the floor where the pests are most numerous. Fill a second plate or pan with water and connect the two with a few small pieces of wood, thus forming a bridge from one to the other. The roaches will eat the mixture, drink the water and soon cease to give further trouble.

Pyrethrum is the most effective in exterminating the many species of ants that frequent pantries and other places in the house. It should be kept in an air-tight box and frequently dusted along the runways where the insects abound. The only satisfactory method of getting rid of termites or white ants is by the removal and destruction of all infested wood. When their burrows are discovered, benzine or bisulphide of carbon should be poured into them.

Sow bugs, or pill bugs, will succumb to freshly sliced raw potato, poisoned by dipping into a strong arsenical solution or dusted with dry arsenic, paris green or green arsenoid, and distributed around the infested area.

Bedbugs require constant vigilance on the part of the housewife when once they infest a place. Benzine, turpentine, corrosive sublimate solution or even pyrethrum are the best destroyers of this pest.

### UNTIL THE PLUMBER COMES.

If a leak occurs in the pipes, turn off the water. Generally the boiler connection is with a tank at the top of the house and the stop handle is there; sometimes, with galvanized boilers in use, it is in the cellar. Every housekeeper should know the spot in her house where the water turns off. Let the water out of faucets also. In the most of these handles there is a small hole at the side called the stop waste. This should be plugged, or every bit of water will be siphoned out of the boiler.

A small leak in the boiler or pipe can be stopped absolutely by the use of electric tape. Every housekeeper should keep some in the house. If there be a small hole, stick one end of the tape in hole and then bind the tape tightly around the boiler. For a larger hole, just bind around tightly. It will hold perfectly for several days. If one has no electric tape, a mixture of common yellow soap and whiting, mixed with water, will oftentimes stop a leak as effectively as solder, temporarily, providing you turn the water on again rather slowly, as a sudden rush might force it out.

When the boiler begins to snap and crack and the pipes begin to bang, turn on the hot water faucet and let the steam escape. This almost always means a stoppage in the pipes. Probably they are choked with iron rust. As long as there is water in the boiler it will not burst. In case of a leak in the pipe between the stove and the main pipe connection, let out the fire.

AMERICAN AGRICULTURIST  
RUNNING A FURNACE.

For the general, everyday working of a furnace, the following rules, offered by an experienced furnace man, can be relied on to keep up a good fire: 1. Close check in chimney pipe and the slide in door. 2. Open the air box a little, then shake the grate till live coals begin to fall. Leave the lower door open. As soon as there is a good draft put on a little fresh coal and open cold air box fully. 3. While waiting for the fire to get a good start, remove all the ashes. If there are any clinkers or bunches of ashes in the bottom of grate, they should be broken up and raked out. 4. In about five minutes close the drafts, which can be regulated during the day according to the house temperature. 5. At night shake the fire down more or less as its condition demands and put on fresh coal; not so much, however, as in the morning. 6. Close the air box two-thirds or wholly if little heat is required during the night. Open the check and the slide in the door.

RULES FOR CLEANING.

To clean white silk, spread upon a smooth white cloth and cleanse with a mixture composed of three-fourths of starch to one-fourth of fine salt. Rub this in on both sides with a clean, soft brush; shake gently and cover with pure powdered starch also rubbed in. Cover to exclude dust and leave for 24 hours, when you can shake and brush out the powder and find a spotless garment.

To cleanse white chiffon, take two parts finely powdered starch to borax one part.

To cleanse white grenadine, spread the goods smoothly upon a board covered with a clean white cloth. It is better to pin the grenadine to keep it in place. Then rub with a mixture composed of equal parts of fine salt and dry flour. Use a soft brush, like a complexion brush, to rub the mixture in. Scrub as if you were scrubbing with soapsuds and water. Then cover thickly with flour and leave for several days.

To clean white cloth, shake the garment well to free from dust as much as possible; cover with clean bran, then rub with a ball made of equal parts of pipe clay and whiting tied up in a piece of old white muslin. After rubbing thoroughly, shake off the bran.

For cleaning white belts or shoes, use pipe clay or gasoline; the pipe clay is much to be preferred on account of its freedom from odor and its safety.

White china silk and pongee can both be easily cleaned by washing in tepid water (using soap to form the suds), rinse well, wrap in a clean, dry cloth and iron while still wet.

For sleeping rooms, white is said to be the most sanitary color, as it is the most restful and least absorbent of germs and odors. Have white washable curtains and a bare floor or one

covered with matting which can be washed up with salt and water. Have wool blankets; eschew silk comforters, for silk is a non-conductor.

### HOME MILLINERY.

Buy frames, straw braids, ribbons and flowers from wholesale houses.

Use strong thread and short round-eyed needles.

Make every stitch secure against stiff breezes.

In sewing wire into bows, cotton thread is better than silk.

Velvet may be renovated by steaming.

Never dye ribbon without first cleansing thoroughly.

Study the prevailing styles and modify them to individual needs.

Choose colors that harmonize and consider the value of shades and tints of one color.

Watch out for loose ends of threads and braids.

Clean white straw hats with dry sulphur and salt in equal parts. Rub on with an old tooth brush.

No article of clothing repays care more than hats. Brush free from dust as soon as removed and place in boxes. Never put a hat, unprotected, on a shelf.

### PROPER SWEEPING.

One of the secrets of sweeping a carpet is to hold the broom almost perpendicular and take short strokes. Do not lift the broom more than 2 inches from the floor. If the carpet is very dusty, tear paper into small bits and soak in water for a few minutes, then press out the water and sprinkle the paper over the carpet. The damp paper will absorb the dust. It improves the carpet to wipe it after sweeping with a cloth which has been wrung out of ammonia water—one tablespoon of household ammonia to one quart of water.

When sweeping bare floors, the broom or brush should be slanted slightly and kept close to the floor. The stroke should be long.

### USEFUL HOUSEHOLD SUGGESTIONS.

One of the best and handiest things to clean bone, ivory or pearl knife handles is moist, fine salt. Polish afterward with a dry, soft cloth.

Spirits of camphor will remove white spots made by wet or hot dishes on polished and varnished furniture.

Never leave a lamp turned low. It creates gas and uses up as much oil as when it burns brightly. If it is necessary to have a light during the night in a sick room use a tiny night lamp and burn it at full force.

Dark spots in the kitchen floor which hint of grease-spilling at a long past date will generally disappear with repeated applications of benzine. Do not apply it when there is any light around, and set doors and windows open to allow the fumes to evaporate.

If windows have to be cleaned in zero weather, dampen the cloth with alcohol instead of water. It will prevent an ice film forming on the glass.

A good thing for cleaning brass or copper is sweet oil and putty powder. Afterward, wash in hot water and soap, then polish.

Sometimes a knife with which onions have been cut will keep the odor in spite of scouring. Jab it in the damp earth a few times and it will be cleansed perfectly.

Equal parts of ammonia and spirits of turpentine will take paint out of clothing, no matter how hard or dry it may be. Saturate the spot two or three times, and then wash out in soapsuds.

Discolored tea and coffee pots and pans that are not too badly discolored should be filled with soft water and have thrown into them two or three spoonfuls of wood ashes, letting the water come just to the boiling point.

Small mops, which can be obtained at any furnishing store, are most useful in cleaning bathroom vaults, etc.

After buying table and bed linen, it is well to erase the pencil marks before laundering, as it is difficult to eradicate them afterward.

Do not starch curtains while they are wet; they will soil much faster than if allowed to dry beforehand.

When making bags to put away silverware, always use the unbleached material. Sulphur is used for bleaching, and its influence will quickly tarnish the silver.

When washing gilded china, never put soda in the water, as it injures the gilding. Use soap, which answers just as well and has no ill effects.

Knives and forks not in general use will keep bright and rust free if lightly rubbed with olive oil before they are put away.

Rust on steel will generally yield to a paste made from fine emery powder and kerosene. Rub the spots with this, let it stand for several hours, then polish with oil.

Tin covers screwed down tightly on jars are easily removed by taking hold of them with a piece of sandpaper.

Two long linen runners, one each way of the table, are now used in some fashionable circles in preference to the whole cloth or dollies.

After cleaning the pantry, set a small jar of lime in some shelf corner. It will keep the room dry and make the air pure. Repeat the same process for the cellar, using lime in larger proportion.

When a floor is washed it should be allowed to get perfectly dry before the carpet is put down again. Carelessness in this matter has much to do with the prevalence of moths in some houses.



To remove rust stains from matting, cover the stain with paper and place a warm iron on this. When the spot is warm, dip a glass rod in a bottle of muriatic acid and go over the rust spot with it, wetting every part with the acid. The spot will turn a bright yellow. Instantly wash it with an old tooth-brush dipped in boiling water, then wash with a cloth or sponge, and clear cold water; rub dry with woolen cloth. Before beginning the work, have all appliances ready and then work rapidly from start to finish. Muriatic acid corrodes metals, therefore keep the bottle corked tight when not using it. Two or three rinses of the acid will be ample.

To clean silver, dissolve one ounce of powdered borax in one-half pint of boiling water; when the liquid is cold, pour it on four ounces of precipitated chalk and beat until smooth. Add one gill of alcohol and bottle. Shake well before using.

To make leather waterproof, saturate it with castor oil.

To remove tar from cloth, rub it well with turpentine.

To set the color in lawn, dissolve a half pound saltpeter in a pailful water and dip the lawn in it several times before washing.

To remove egg stains from spoons, rub with common salt.

To remove the stains of fruit from the hands, wash your hands in clear water, dry slightly and while yet moist strike a sulphur match and hold your hands around the flame. The stains will immediately disappear.

To clean furniture, rub with cotton waste dipped in boiled linseed oil; then rub clean and dry with a soft flannel cloth.

To test whether an article is gilt or made of a gold-colored alloy, a solution of bichloride of copper makes a brown spot on alloy, but produces no effect on a surface of gold.

To restore gilt frames, rub with a sponge moistened in turpentine.

### COOKING WEIGHTS AND MEASURES.

To make one pound, use:

2 cups lard.

2 cups butter.

4 cups pastry or bread flour.

3 $\frac{3}{4}$  cups entire wheat flour.

4 $\frac{1}{2}$  cups graham flour.

4 1-3 cups rye flour.

2 2-3 cups corn meal.

4 $\frac{1}{2}$  cups rolled oats.

2 2-3 cups oatmeal.

4 1-3 cups coffee.

2 cups granulated sugar.

2 2-3 cups powdered sugar.

3 $\frac{1}{2}$  cups confectioner's sugar.

2 2-3 cups brown sugar.

2 cups chopped meat.

1 $\frac{1}{8}$  cups rice.

2 cups raisins (packed).

2 $\frac{1}{4}$  cups currants.

2 cups stale bread crumbs.

9 large eggs.

2 tablespoons butter make 1 ounce.

4 tablespoons flour make 1 ounce.

6 tablespoons baking powder make  $\frac{1}{2}$  ounce.

3 teaspoons make 1 tablespoon.

16 tablespoons dry ingredient make 1 cup.

## KITCHEN "NEEDFULS" AND THEIR RETAIL PRICE.

TIN AND STEEL WARE.		AGATE WARE.	
Round tin pan.....	\$0.10	Quart saucepan with cover.....	\$0.25
Biscuit cutter .....	.05	2-quart saucepan with	
Doughnut cutter .....	.05	cover .....	.35
Quart measure .....	.10	3-quart saucepan with	
Flour sifter .....	.10	cover .....	.45
Colander .....	.15	Soup kettle .....	.55
Large grater .....	.10	Pint saucepan with cover.....	.15
Wire broiler .....	.10	Coffeepot .....	.50
Nutmeg grater .....	.05		
Set skewers .....	.25		<b>\$2.25</b>
Steamer .....	.25	<b>EARTHEN AND GLASS-</b>	
Baking sheet .....	.25	<b>WARE.</b>	
3 bread pans .....	.30	Glass measuring cup.....	\$0.10
2 cake pans .....	.20	2-quart yellow bowl.....	.15
2 pie plates .....	.10	4 small earthen bowls.....	.20
Quart pudding mold.....	.25	2 oval pudding dishes.....	.20
Salt shaker .....	.05	Large cake mixing bowl....	.30
Pepper shaker .....	.05	Bean pot .....	.15
Flour dredger .....	.05	Glass lemon squeezer .....	.10
Soap shaker .....	.05		<b>\$1.20</b>
Wire dishcloth .....	.05	<b>WOODENWARE.</b>	
Dustpan .....	.25	Flour bucket .....	\$0.10
Dish drainer .....	.10	Molding board .....	.20
Hand basin .....	.10	Rolling pin .....	.10
Soap dish .....	.05	Wooden mixing spoon.....	.10
Large egg beater .....	.20	Small scrubbing brush for	
Omelet pan .....	.10	vegetables .....	.10
Spider .....	.20	Large scrubbing brush.....	.12
Frying basket .....	.10	Towel rack .....	.10
Vegetable knife .....	.10	Blacking brush .....	.10
Bread knife .....	.25	Broom .....	.25
Wire fork .....	.05	Mop .....	.10
Wire whisk .....	.05		<b>\$1.27</b>
Extension soup strainer....	.18	<b>LINEN.</b>	
Cream whip .....	.15	6 dish towels.....	\$0.60
Meat chopper .....	1.25	6 glass towels .....	.60
Small strainer .....	.10	Dishcloth .....	.05
Skimmer .....	.05		
Potato ricer .....	.25		<b>\$1.25</b>
Dipper .....	.10		
Bread raiser .....	.35		
Dish pan of heavy tin.....	.50		
Teakettle .....	.60		
	<b>\$6.73</b>		

CLASSIFICATION OF FOODS

CLASS OF FOOD.	WHERE FOUND.	OFFICE IN BODY.
Nitrogenous.	Albuminoids or Proteid	Eggs, fish, meat, casein in milk, fiber of lean meat, gluten of wheat.
	Gelatinoids.	Collagen or gelatin of cartilage. Ossein or gelatin of bones.
Non-Nitrogenous.	Carbohydrates.	Starch, dextrine, cellulose. Cane sugar, maltose, lactose, dextrose, levulose.
	Veg acids.	Oxalic, tartaric, citric, malic (excess of O.), acetic, lactic (defect of O).
Hydrocarbons.	Fats.	olein stearin palmitin
	Oils.	fixed volatile
Mineral.	Salts.	Chlorides, phosphates, etc., of potassium, sodium, calcium.
	Water.	Carrier of food and waste.
		Formation and repair of tissue Regulation of absorption and utilization of oxygen. May form fat. Partially converted into peptones in digestion Same function as the above, but less perfectly Supply heat and energy by oxidation Supply of fat by reduction converted into dextrose in digestion. Preserve alkalinity of blood. Supply heat and energy by oxidation. Supply of fatty tissue. Same function.

## FOODS IN SEASON.

## IN THE MARKETS, OR OBTAINABLE AT MOST PLACES.

In January: Salmon, smelts, oysters, crimped cod, mullet, mackerel, turbot, eels, lobsters, crawfish, haddocks, crabs, turkeys, ducks, capons, quails, geese, ducklings, pheasants, snipes, wild ducks, hares, fowls, guinea fowls, partridges, teal, rabbits, pigeons, woodcocks, ptarmigans, beef, veal, mutton, house lamb, asparagus (forced), cucumbers, artichokes, mushrooms (forced), brussels sprouts, cauliflower, lettuces, French beans (forced), radishes, carrots, rhubarb, turnips, spinach, small salad, celery, grapes, walnuts, pears, pines, apples and oranges.

In February: Salmon, mackerel, lobsters, eels, trout, mullet, fresh herrings, cod, turbot, oysters, haddock, crabs, smelts, turkeys, ducks, capons, quails, fowls, ducklings, guinea fowls, goslings, woodcock, ptarmigan, pigeons, geese, wild ducks, snipe, beef, mutton, veal, house lamb, asparagus (forced), artichokes, brussels sprouts, spinach, cauliflower, radishes, cucumbers, French beans (forced), mushrooms, turnips, celery, lettuces, small salad, carrots, rhubarb, pines, grapes, pears, apples and oranges.

In March: Salmon, eels, oysters, turbot, fresh herrings, lobsters, cod, mullet, crabs, trout, mackerel, crawfish, turkeys, capons, ptarmigan, goslings, fowls, ducks, guinea fowls, ducklings, pigeons, quails, beef, mutton, veal, house lamb, spinach, rhubarb, parsnip, lettuces, turnips, cucumbers, small salad, celery, French beans, mushrooms, radishes, pines, strawberries (forced), pears and apples.

In April: Salmon, eels, oysters, trout, fresh herrings, prawns, turbot, mullets, lobsters, cod, smelts, crabs, goslings, guinea fowls, black game, ducks, pigeons, ptarmigan, ducklings, quails, fowls, beef, mutton, veal, lamb, asparagus, spinach, peas, cauliflower, new potatoes, French beans, sprouts, radishes, mushrooms, small salad, strawberries (forced), cherries (forced), apricots (forced) and pears.

In May: Salmon, smelts, eels, turbot, mullets, whitebait, trout, mackerel, lobsters, cod, crabs, goslings, fowls, ducks, guinea fowls, ducklings, pigeons, capons, quails, beef, mutton, veal, lamb, asparagus, spinach, mushrooms, peas, cauliflower, cucumbers, French beans, turnips, lettuces, carrots, small salad, strawberries, cherries, pineapples, gooseberries, apricots, currants, grapes and melons.

In June: Salmon, turbot, lobsters, trout, mackerel, whitebait, red mullets, turkey poults, fowls, pigeons, goslings, guinea fowls, ducks, peafowls, buck venison, ducklings, quails, beet, mutton, veal, lamb, asparagus, spinach, cucumbers, peas, cauliflower, mushrooms, French beans, turnips, lettuces, carrots, small salad, pineapples, melons, raspberries, grapes, currants, peaches, strawberries, gooseberries, apricots and cherries.

In July: Salmon, turbot, lobsters, trout, mackerel, whitebait, red mullet, turkey poults, fowls, goslings, pigeons, ducks, buck venison, ducklings, leverets, beef, mutton, veal, lamb, peas, cucumbers, French beans, mushrooms, broad beans, lettuces,

**cauliflower, small salad, pineapples, melons, raspberries, grapes, currants, peaches, strawberries, gooseberries, apricots, cherries and plums.**

**In August: Salmon, oysters, trout, lobsters, cod, mackerel, turbot, mullet, turkey poults, fowls, buck venison, goslings, pigeons, ducks, grouse, ducklings, beef, mutton, veal, lamb, peas, cucumbers, French beans, mushrooms, lettuces, cauliflower, small salads, melons, apricots, currants, pears, gooseberries, peaches, grapes, plums, mulberries and cherries.**

**In September: Salmon, mullet, oysters, turbot, lobsters, crabs, mackerel, eels, turkey poults, fowls, hares, geese, partridges, ducks, grouse, larks, ducklings, buck venison, beef, mutton, veal, lamb, French beans, spinach, peas, cucumbers, artichokes, mushrooms, cauliflower, salad, pineapples, plums, figs, currants, grapes, cherries, melons and quinces.**

**In October: Salmon (Dutch), mackerel, oysters, turbot, lobsters, cod, eels, turkeys, pheasants, wild duck, geese, partridges, ducks, grouse, venison, fowls, hares, beef, mutton, veal, lamb, French beans, cucumbers, artichokes, mushrooms, cauliflower, salad, pineapples, peaches, grapes, apples, figs, quinces and pears.**

**In November: Salmon, cod, lobsters, turbot, oysters, eels, smelts, turkeys, pheasants, wild ducks, ptarmigan, geese, woodcock, larks, ducks, black game, golden plovers, snipes, fowls, widgeon, teal, venison, beef, mutton, veal, lamb, French peas, mushrooms, spinach, cucumbers, artichokes, lettuces, cauliflower, salad, pineapples, apples, grapes, figs and pears.**

**In December: Salmon, oysters, turbot, cod, lobsters, red mullet, dory smelts, turkeys, pheasants, geese, partridges, larks, ducks, grouse, ptarmigan, hares, fowls, wild ducks, doe venison, golden plovers, beef, mutton, veal, lamb, asparagus (forced), spinach, rhubarb, sea kale, French beans, lettuce, artichokes, cucumbers, salad, cauliflower, mushrooms, pineapples, walnuts, grapes, pears and oranges.**

### TO COMBINE INGREDIENTS IN COOKERY.

Next to correct measuring comes the care in combining ingredients, a fact often overlooked by the inexperienced. There are three methods to be considered—stirring, beating, cutting and folding.

To stir, means to mix by using a circular motion, widening the circles to thoroughly blend the materials. This is the motion ordinarily used.

To beat, we continually turn the ingredients over and over so as to bring the under part to the surface. By beating we inclose a large amount of air into the mixture.

To cut and fold we combine two ingredients by the use of two motions—the one a repeated vertical downward motion of cutting, and second, by turning the ingredients over and over from the bottom, allowing the bowl of the spoon to touch the bottom of the dish each time. These two motions are repeated until the mixture is well blended.

By stirring, ingredients are blended; by beating, a large amount of air is inclosed, and by cutting and folding, the air already beaten in is carefully retained.

#### FISH FOR CHOWDER.

Cod and halibut (mixed), halibut, haddock, eels, little neck clams, long clams, round clams, oysters.

smelts, haddock, halibut, salmon, eels, tinker mackerel, bullheads, white perch, whitefish, soft shell crabs, live lobster, long clams, scallops, large oysters.

#### FISH BEST BOILED.

Salmon, cod, red snapper, halibut, swordfish, haddock, black bass, sturgeon.

#### FISH TO BROIL.

Fresh mackerel, bonito mackerel, cod scrod, chicken halibut, shoal halibut, sea trout, weakfish, Spanish mackerel, fresh salmon, bluefish, large eels (split), shad, whitefish, trout.

#### FISH FOR STEWING.

Lobster, little neck clams, oysters, shrimps, round clams (chopped), scallops.

#### FISH TO BAKE.

Bluefish, shad, mackerel, haddock, halibut, striped bass, whitefish, lake trout, long shell clams, live lobster, large oysters.

#### FISH TO FRY.

Butterfish, shad, cod (steak), swordfish, bluefish, porgies, bonito mackerel, pickerel, clis-coes, yellow perch, brook trout,

### COOKING EGGS.

Eggs should never be cooked in water which makes them hop merrily about. They only grow tough, horny and indigestible in boiling water.

If cooked in water at a low temperature, they may be digested by a child or an invalid. It is not generally understood why eggs should be differently treated for different sorts of dishes.

Eggs to be used for cakes, souffles and omelets must be divided, the yolks and whites beaten separately. The success of such dishes depends wholly upon the amount of air beaten into the eggs. The expansion of that air by rather slow cooking means the success of such dishes. Beat the yolks until they are thick and lemon colored, the whites till so stiff and dry that they fly from the beater like foam. While beating the white of eggs hold the Dover beater at an angle instead of straight up and down in a bowl. The work in this way can be done in much less time. Use, too, the wrist movement, not the strength of the whole arm. By remembering these two rules you will not grow so tired or find your arm becoming lame before the eggs are beaten.

The eggs for custards require the yolk and white to be beaten together, not as hard as for an omelet. And one more rule for cooking of eggs, never break them all into the same dish at once. Drop them one by one in a cup. In this way if a bad egg should occur, it would not ruin the half-dozen that came before.

## CANNING AT HOME.

### TO SEAL JARS.

Have good, sound cans, covers and rubbers. Have cans, covers and fruit hot. Fill the cans full, and if any air bubbles form, press down the fruit with a spoon and the bubbles will rise to the top. Put on good rubbers, press down firmly onto the can. Put on cover and screw down tightly, either with a good wrench or a good strong hand. Set up the cans and let them decidedly alone. Do not be tempted, when the strong man of the house comes in, to have him give an extra turn, for here is a great mistake. The fruit and can being hot, the rubber expands and sets, and when turned again it never sets the same, and so there is a chance for air holes and poorly kept fruit. If possible, put fruit away in a dark closet.

### STRAWBERRIES.

Place 4 lbs. of granulated sugar and 1 cup cold water over the fire, boil until perfectly clear, then turn into it a gallon of fresh, not overripe, strawberries of the small variety, and gently boil the whole for 10 minutes, keeping the fruit well covered with the syrup, but do not stir it. By means of a wire strainer transfer the berries to hot glass cans, filling nearly full. Boil the syrup 10 minutes longer, fill up the cans, let stand till cool, add a tablespoon of brandy to each can and seal. When cold, wrap in paper and place in the dark.

### WHOLE GRAPES.

Clean the grapes by pouring cold water over them, pick all the perfect ones from stems, fill glass can with the ripe grapes. Pour on boiling water till they are covered, and turn off when cold, doing this four or five times, each time using fresh boiling water. Have a syrup made of good white sugar, boiling hot, and pour over the grapes, then seal up.

### BLUEBERRIES.

Pick over berries, wash and drain them, then measure and for every quart of berries allow 1 cup granulated sugar and  $\frac{1}{2}$  cup cold water. Put sugar and water in kettle and let come to a boil, add the berries and boil 10 minutes. Have ready your glass jars, dip them sideways in scalding water, allowing water to come in contact with inside and out at the same time, drain;

have ready a pan, pour in about an inch of hot water, stand your jars in this and fill with the boiling fruit. Put on a new rubber and screw down the top tight while hot. Wipe dry. Turn upside down on a table and see if they leak. If they do, try an extra rubber. After you are sure they are airtight, set away on a shelf, in a dark, cool corner of the cellar, where they will be ready for use at any time.

#### RHUBARB.

Wash the stalks and put into self-sealing cans, packing the stalks as closely as possible. Fill the cans full with fresh cold water and close the covers tight. Keep in a cool place.

#### PEACHES.

Take 1 peck of ripe cling peaches, pare and place in an earthen vessel. Ream out the seed with a sharp pocket knife, and thus have the peaches in halves. This quantity will fill two half-gallon jars. Put on the preserving kettle, which should be thoroughly clean. Then put in the kettle  $\frac{1}{2}$  pt. water and 2 lbs. sugar. Let the sugar dissolve and add the peaches. Place the jars to be used, each in a plate, with rubber on and cap alongside, on the apron of the stove. Turn frequently so as to prevent heating too much on one side. Let the peaches boil moderately for about 20 minutes. Then, when still boiling, without removing from the stove, proceed to fill the jars, using a common cooking spoon. Fill the jars well, leaving no cavity for air. Then, as quickly as possible, place on the caps, and screw down as tight as you can, using two dry cloths, one to hold the jar and the other to hold the cap, to prevent burning. When the caps are well tightened, remove the jars to a table and wash with warm water, as cold water will break the jars. Store in a cool, dry place, where they will not freeze in winter.

#### VEGETABLES IN GENERAL.

For sweet corn, cut the raw corn from the cob, pack it into the jars firmly, place rubbers on jars, and fill with cold water. If Lightning jars are used, place the wire over cover but do not press side wire down. If Mason jars, screw on the cover sufficient to lift the jars by it. Place laths, hay or something of the sort in the bottom of the wash boiler. Place jars on it to keep them from the bottom of the boiler, also place some hay between the jars to prevent breaking. Fill boiler with cold water to cover body of jars, leaving tops out of water. Place on fire, and when boiling, keep boiling three hours, adding more hot water if necessary. When done, remove jars from boiler, fasten covers firmly, keep in paper bags or in dark places. For peas, shell, pack in jars, add 1 teaspoonful salt before filling jars with water; proceed as for corn. Green beans should be cut or broken into small pieces, then proceed as for peas. Squash,



pumpkins or any other vegetable may be canned this way. Cut and pare squash and pack in firmly, also the pumpkin. When ready to use, pour away the water in the jars, place fresh water on and cook as fresh vegetables, but not so long.

#### EAST INDIA PRESERVES.

Take 8 lbs. whole pears, with skins off, and slice. Add 6 lbs. granulated sugar, 3 lemons (the rind shaved off in thin slices, the white skin discarded and the lemons sliced), and 2 oz. green ginger root, washed, scraped and chopped fine. Put all together and boil slowly three hours, then put in jelly glasses. Put paraffin over top, or parchment paper dipped in alcohol, to keep from molding. Fixed in this way they will keep as long as you wish.

#### PICKLED GREEN PEPPERS.

Take a few green peppers and cut them crosswise into halves. Take out the seeds. Put the peppers into a bowl of strong vinegar, which has been very strongly salted. In 24 hours you will have an unsurpassed relish for the dinner table.

#### CRISP SOUR CUCUMBERS.

Select rather small cucumbers, wash and put in jars. To each gallon of cucumbers sprinkle 1 teacup coarse salt, pour on boiling water to cover and let stand over night. In the morning wipe out of brine and pack in cans. Heat at the rate of 1 teacup coarse salt to a gallon of vinegar and pour over pickles. Seal. If pickles are wanted for immediate use, they may be put in crocks. Pickles put up in this manner are very crisp and sure to keep if put in good vinegar.

#### CHILI SAUCE.

Pour boiling water over 12 ripe tomatoes, remove skins, cut in slices. Chop fine 2 large green peppers and 1 large onion. Put 1 pt. cider vinegar, 1 tablespoon salt, 1 cup brown sugar, 1 teaspoonful each of allspice, cloves, nutmeg and ginger in a porcelain-lined kettle, add the tomatoes, peppers and onion, and boil all together till all is soft.

#### SWEET PICKLE PEPPER.

Take ripe sweet peppers, remove the seeds, cut in quarters, and soak in salt water over night. Drain and scald in weak vinegar until tender. Drain and put them into hot water, rinse cans and cover them with a syrup made of  $1\frac{1}{2}$  cups granulated sugar and 1 cup vinegar (not too sour), boiled sufficiently for the sugar to be melted. Have the syrup boiling hot when filling cans and seal at once.

## TIME-TABLE.

## BAKING AND ROASTING.

## FISH AND MEATS.

Baked beans with pork—6 to 8 hours.  
Beef, fillet, rare—20 to 30 minutes.  
Beef ribs or loin, well done, per pound—12 to 16 minutes.  
Beef ribs or loin, rare, per pound—8 to 10 minutes.  
Chicken, per pound—15 minutes or more.  
Duck, domestic—1 hour or more.  
Duck, wild—12 minutes per pound.  
Fish, whole, as bluefish, salmon, etc.—10 minutes per pound.  
Goose, 8 to 10 pounds—2 hours or more.  
Grouse—25 to 30 minutes.  
Ham—15 minutes per pound.  
Lamb, well done, per pound—15 to 18 minutes.  
Liver, whole—12 minutes per pound.  
Mutton, leg, well done, per pound—15 minutes or more.  
Mutton, leg, rare, per pound—10 minutes.  
Mutton, saddle, rare, without flank, per pound—9 minutes.  
Mutton, shoulder, stuffed, per pound—15 to 25 minutes.  
Partridge—35 to 40 minutes.  
Pork, well done, per pound—20 minutes.  
Small fish and fillets—20 to 30 minutes.  
Turkey, 8 to 10 pounds—12 minutes per pound.  
Veal, well done, per pound—18 to 20 minutes.  
Venison, rare, per pound—10 minutes.

## BROILING.

Bacon—4 to 8 minutes.  
Lamb, or mutton chops—8 to 10 minutes.  
Liver—4 to 8 minutes.  
Quail—10 to 15 minutes.  
Quail in paper cases—10 to 12 minutes.  
Steak, 1 inch thick—8 to 12 minutes.  
Steak, 1½ inches thick—9 to 15 minutes.  
Shad, bluefish, etc.—15 to 30 minutes.  
Slices of fish—12 to 15 minutes.  
Spring chicken—20 minutes.  
Small fish, trout, etc.—8 to 12 minutes.  
Squabs—10 to 15 minutes.

## FRYING.

Bacon fried in its own fat—2 to 3 minutes.  
Chops, breaded—8 to 10 minutes.  
Doughnuts and fritters—3 to 5 minutes.  
Fillets of fish—4 to 6 minutes.  
Potatoes—2 to 5 minutes.

## BOILING.

## MEATS.

Chicken—1 to 1½ hours.  
Corned beef (rib or flank)—4 to 6 hours, according to size.  
Corned beef (fancy brisket)—5 to 8 hours.  
Corned tongue—3 to 4 hours.  
Fowl, 4 to 5 pounds—15 minutes per pound, if tender.  
Fresh beef—4 to 6 hours.  
Ham—4 to 6 hours.  
Mutton—15 minutes per pound.  
Turkey, per pound—15 to 18 minutes.

## FISH.

Clams and oysters—3 to 5 minutes.  
Codfish and haddock, per pound—10 minutes.  
Bass and bluefish, per pound—10 minutes.  
Halibut, whole or thick piece, per pound—15 minutes.  
Lobster—30 to 40 minutes.  
Salmon, whole or thick piece, per pound—10 to 20 minutes.  
Small fish—6 to 8 minutes.

## BOILING VEGETABLES.

Asparagus—20 to 25 minutes.  
Beans, string—1 to 2 hours.  
Beans, lima—30 to 40 minutes.  
Beets, new—45 minutes to 1 hour.  
Beets, old—4 to 6 hours.  
Brussels sprouts—15 to 25 minutes.  
Cabbage—30 to 80 minutes.  
Carrots (old)—1 hour or more.  
Cauliflower—20 to 30 minutes.  
Celery—20 to 30 minutes.  
Corn—10 to 20 minutes.  
Macaroni—20 to 50 minutes.  
Onions—45 minutes to 2 hours.  
Oyster plant—45 to 60 minutes.  
Parsnips—30 to 45 minutes.  
Peas—20 to 50 minutes.  
Potatoes, white—20 to 30 minutes.  
Potatoes, sweet—15 to 25 minutes.  
Rice—20 to 30 minutes.  
Squash—20 to 30 minutes.  
Spinach—20 to 30 minutes.  
Tomatoes, stewed—15 to 20 minutes.  
Turnips—30 to 45 minutes.

## STEAMING.

Brown bread—3 hours.  
 Puddings, one quart or more—2 to 3 hours.  
 Rice—45 to 60 minutes.

## BAKING OF BREAD, CAKES, CUSTARDS AND PUDDING.

Fruit cake—2 to 3 hours.  
 Layer cake—15 to 20 minutes.  
 Loaf bread—40 to 60 minutes.  
 Muffins, baking powder—20 to 25 minutes.  
 Muffins, yeast—About 30 minutes.  
 Pie crust—30 to 45 minutes.  
 Plain loaf cake—30 to 90 minutes.  
 Potatoes—30 to 45 minutes.  
 Rolls, biscuit—10 to 30 minutes.  
 Scalloped and au gratin dishes—10 to 20 minutes, according to size.  
 Sponge cake, loaf—45 to 60 minutes, according to size.  
 Timbales—About 20 minutes.

The instructions given above must be modified by circumstances; the age and quality of meat, vegetables and fish, the size of loaves and so forth. It is not possible to make out a table which shall be absolutely accurate. Experience is the one trustworthy teacher.

## THE FIRST OF THINGS.

The Chinese invented paper in 170 B. C.  
 Envelopes were first used in 1839.  
 Iron horseshoes were made in 481.  
 Telephones were invented in 1861.  
 The first Atlantic cable was operated in 1858.  
 The pianoforte was invented in Italy about 1710.  
 The first lucifer match was made in 1829.  
 The first steamer crossed the Atlantic in 1819.  
 Telescopes were invented in 1590.  
 The first steel pen was made in 1830.  
 Watches were first constructed in 1476.  
 Gold was discovered in California in 1848.

Question.—W  is a   

Answer.—W  is A 

## *The Young Folks*

### CHILDREN'S PARTIES.

The invitations for these give room for any amount of prettiness and ingenuity. They may be written by the mother, or the child may pen them in his or her own wabby characters; they may be in rhyme, or may be decorated with tiny water colors of Mother Goose people, or any other suitable subject. The little guests all reply as soon as possible, having also a wide range in the matter of their notes.

There are a few secrets about making a party for little folks successful. There should be as much music as possible; the games should be well planned beforehand, so that no drags occur; the refreshments must be simple and wholesome, and easily handled by chubby fingers; and instead of one or two handsome prizes for skill in certain games, the aim should be to see that every child carries home some pretty trifle in the way of a favor. If the occasion is a birthday, and the guests bring gifts, good taste demands that these be simple and inexpensive; and a wise mother takes this occasion to teach my lady the why of removing cards from presents, explaining that their display invites comparison which is unpleasant.

Indeed, the value of these little parties as an opportunity to inculcate the principles of good breeding is very great; for the man or woman who learns manners and deportment before the age of ten never loses them in the 60 or more years of after life.

### WALKING LETTERS.

By Mary Dawson.

An excellent game for young people from six to 11 years is called Walking Letters. The children present are formed into two bands or sides, each band containing exactly the same number of players. The bands are separated when the game is about to begin, each side taking up its position in one end of the room. Lots are drawn to decide which band will be first to choose a letter. The side drawing the slip marked "Begin" consult among themselves and choose a letter—any letter in the alphabet, from A to Z. The letter is kept strictly secret from members of the opposing band and is walked by one of the beginning side, who takes up his position in the center of the floor, and forms the letter by walking about in any direction necessary to describe an imaginary character upon the carpet. Each letter is walked three times, very slowly and carefully. If the opposing party can guess its name, a point is won for their side and chalked upon the blackboard where score is kept. If they fail to guess it, nothing is won, and the turn passes to the opponents, who now endeavor to guess a second letter outlined by one of those who were formerly guessers. And so the fun goes on until each side has had plenty of chances. When

the guessing side wins a point, that is, when they guess the letter correctly, they may demand other letters, and go on guessing and winning until they lose a point, when the turn reverts to the opponents.

Numbers can be walked as well as letters, and will be found to make a pleasant deviation in the long game. Walking Letters offers a suggestion for an afternoon party which can be arranged for in half an hour by using the idea and securing a few pretty things for prizes. Members of the side winning the most points draw among themselves for the first prize. It is just as well to have inexpensive consolation gifts on hand for all who fail to win a trophy, thus preventing a lot of disappointment.

### A PAPER PARTY.

By Virginia Van De Water.

The invitations for this party should be issued long enough beforehand for the parents of the children to prepare for them costumes of tissue paper. This will not be found as difficult as it sounds. Any woman who is deft with her fingers can make such a costume for her small boy or girl. The mother of each guest may send word to the hostess what color her costume will be and the hostess will then get a fancy paper cap to match each dress and suit.

The parlors and hall and dining room can be decorated with Chinese lanterns and tissue paper flowers and streamers. Over the dining table may be hung a huge paper umbrella of the Japanese variety, and from the tip of each rib of this is suspended a paper bag containing some trifle, such as a tiny Chinese doll. The table is spread with a white cloth, and lighted by candles with colored paper shades. Refreshments are served in papier mache plates. Japanese paper napkins are at each place.

When the little ones are assembled all are told to hunt for the caps that match their costume. These caps are hidden about the rooms, and each child is instructed not to touch any cap except one that is of the same color as his clothes. This gives rise to a great deal of merriment, for the boy or girl who carelessly or rashly puts the tip of a finger on a cap of any hue save the one belonging to him or her is required to pay a forfeit, and after the head coverings are all found, a game of forfeit follows.

Then provide each child with a pair of scissors, a pencil, and a sheet of paper. Each names some animal that she will first draw, then cut out. The one making the best picture wins a prize, the one making the funniest receives a booby prize. The first prize for the girls may be a pretty paper doll with her wardrobe, that can be put on and off. The first prize for the boys is a handsome paper covered book. The booby prize for the girl can be a tiny fan, for the boys a small grotesque

**Japanese doll.** After the prizes are distributed, each child takes his place in the middle of the group and tells what animal he has attempted to draw, while the circle of children make the noise natural to the animal named.

Then come the refreshments, after which clear the dining table, and move away the chairs. Stand the children in a row around the board, and hand to each in order a long stiff switch or stick; or you may give the switches to all at once. With these the little ones are to hook the bags off the tips of the umbrella ribs. It will require a little care to slip the end of the stick through the loop of string by which the paper bag is suspended and lift it down without dropping it. Fortunately, the contents of the parcels are of the unbreakable variety, so no damage is done if they fall.

If there is any time left before the hour for departure, have some comparatively quiet games such as "ring around a rosy," or "hunt the slipper," always bearing in mind that paper costumes, while pretty and effective, are not proof against the rough handling inseparable from romping games.

### POLITENESS FOR CHILDREN.

Talk but little in the presence of your elders, unless spoken to. Learn to be a good listener.

Never enter a room, church or hall first, with an elder person; let them go first.

On entering a house or room, always speak first to the lady of the house, and always take leave of her first.

Never take the most comfortable seat or position in a room if there is an older person present.

### CLEVER BOOKS FOR CHILDREN.

[From Good Housekeeping.]

Stories Told to a Child.....	Jean Ingelow
Fairy Tales .....	Hans Christian Andersen
In the Child's World .....	Emilie Poulsson
Seven Little Sisters Series.....	Jane Andrews
Ten Boys .....	Jane Andrews
Story Mother Nature Told .....	Jane Andrews
The Story Hour .....	Wiggin, Smith
In Story Land .....	Elizabeth Harrison
The Book of Fables.....	Edited by Horace Scudder
The Book of Folk Stories.....	Edited by Horace Scudder
The Book of Legends.....	Edited by Horace Scudder
Kindergarten Stories and Morning Talks.....	Sara Wiltse
Stories for Kindergartens and Primary Schools.....	Sara Wiltse
A Brave Baby, and Other Stories.....	Sara Wiltse
Grimm's Fairy Tales .....	Edited by Sara Wiltse

- Child Life in Prose.....Edited by J. G. Whittier  
 Story of a Happy Home .....Mary Howitt  
 A New Year's Bargain.....Susan Coolidge  
 What Shall We Talk About?.....Published by Thomas Nelson & Sons  
 Granny's Wonderful Chair.....Frances Brown  
 At the Back of the North Wind.....George Macdonald  
 Tanglewood Tales .....Nathaniel Hawthorne  
 Wonder Book .....Nathaniel Hawthorne  
 Water Babies .....Charles Kingsley  
 Books of Saints and Friendly Beasts.....Abbie F. Brown  
 Red Book of Animal Stories.....Andrew Lang  
 Grandfather Stories .....James Johonnat  
 Little Brothers of the Air .....Olive T. Miller  
 Little Folks in Feathers and Furs.....Olive T. Miller  
 Five Minute Stories.....Laura E. Richards  
 Mother Nature's Children.  
 Mother Nature's Rules.  
 Parables from Nature .....Mrs. Gatty  
 Little Folks (magazine, bound volumes).  
 St. Nicholas (magazine, bound volumes).

## POETRY.

- The Child World .....Gabriel Setoun  
 Child Stories and Rhymes.....E. Poulsson  
 Through the Farmyard Gate .....E. Poulsson  
 Child's Garden of Verses.....R. L. Stevenson  
 The Listening Child.....Compiled by Lucy Thacher  
 Lilliput Levee .....William B. Rands  
 Little Folk Lyrics .....F. D. Sherman  
 Child Life in Poetry .....Edited by J. G. Whittier  
 Poems for Children .....Celia Thaxter  
 Cockle Shells and Silver Bells.....M. F. Butts  
 Poetry for Children.....Charles and Mary Lamb  
 Our Baby .....Mrs. Warner  
 Rhymes and Jingles .....M. M. Dodge  
 With Trumpet and Drum.....Eugene Field  
 Poetry for Children .....Mary Howitt  
 The Little One's Annual.  
 Young Folks' Book of Poetry.  
 Open Sesame, Volume 1.....Edited by Bellamy and Goodwin  
 Grandma's Rhymes and Chimes.  
 Mother Play.....Friedrich Froebel (translated by S. E. Blow)  
 Little Songs .....Eliza Lee Follen  
 The Posy Ring.....Edited by Wiggin and Smith

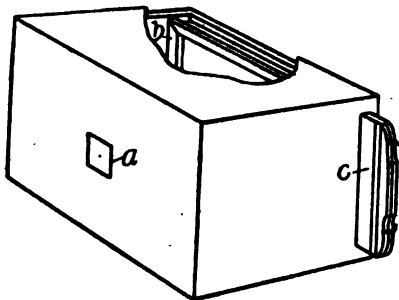


## For the Youthful Genius

### PINHOLE PHOTOGRAPHY.

What is known as pinhole photography is photography in its very simplest form, and the camera required for this is so very easily made that most any boy or girl can possess one. It consists of a box with a pinhole in one end, and a plateholder for the sensitive plate at the other end.

Herewith is shown a drawing of the camera complete. The box should be 8 inches wide, 6 inches long and 6 inches deep. It should be put together accurately, so that not the faintest suggestion of light can get in anywhere. The inside should be painted black, or if black paint is not available, rub on shoe blacking until the whole interior is blackened. Before the box is nailed together, small cleats should be tacked to all sides about half an inch from the end, and made to hold in place a 5x7 plateholder, as is shown at *b c* in the illustration, part of the top being removed to show how the plateholder fits. This must be done carefully, so that when the plateholder is in position no light can get into the box. In the middle of the front end, which is the one directly opposite the plateholder, bore a half-inch hole. Now secure the thinnest piece of copper that you can, the thinner the better. You will not need a piece over an inch square. With a file and emery paper work the center of this down as thin as possible without going through. The copper can be worked down in this way almost as thin as tissue paper. If no copper is available, a copper cent can be pounded flat on an anvil and made thin enough for the purpose.



A Pinhole Camera.

Then take a No. 11 needle, which will be next to the smallest, put the eye end into a cork for a handle and placing the bit of copper on soft wood, press the needle through the thin part in the center until it projects perhaps half an inch, then pull it out gently. This will leave some rough edges on the other side which must be shaved off. This can be done with a razor without injuring the razor blade. It is absolutely necessary that all the edges should be perfectly smooth.

Then take a No. 11 needle, which will be next to the smallest, put the eye end into a cork for a handle and placing the bit of copper on soft wood, press the needle through the thin part in the center until it projects perhaps half an inch, then pull it out gently. This will leave some rough edges on the other side which must be shaved off. This can be done with a razor without injuring the razor blade. It is absolutely necessary that all the edges should be perfectly smooth.

Now if it is possible, get a little nitrate of silver, with which to make a very weak solution. Heating the copper, drop it into the solution; this will oxidize the shiny edges of the inside of the hole, which is quite necessary. When this is done, tack the bit of copper over the hole in the end of the camera at *a* in the illustration, being sure that the needle hole in the copper comes exactly in the center of the half-inch opening in the front. A thin, hard rubber plate can be used instead of copper, and will not need to be oxidized. Now your camera is complete with the exception of the plateholder. This you will have to buy, and you can get it from a dealer in photographic goods. You will want a 5x7 plateholder, which will hold two plates. If you get a plateholder in which is what is called a kit for holding 4x5 plates, you will have a camera capable of taking two sizes of pictures. There being no lens in this camera, it is necessarily what is called "slow"; that is, you cannot take a picture of a moving object. Landscapes, buildings and objects which are stationary you can photograph, when you have learned how long an exposure is required. Objects close to require a longer exposure than objects at a distance.

### THE FIRST STEPS IN ELECTRICITY.

**Electricity**—The name given to the unknown cause of electric phenomena.

**Ampere**—(1) The practical unit of electric current. (2) A rate of flow of electricity transmitting one coulomb per second. (3) The current of electricity which would pass through a circuit whose resistance is one ohm, under an electro-motive force of one volt.

**Volt**—(1) The practical unit of electro-motive force. (2) Such an electro-motive force as is induced in a conductor which cuts lines of magnetic flux at the rate of 100,000,000 per second. (3) Such an electro-motive force as would cause a current of one ampere to flow against a resistance of one ohm.

**Ohm**—(1) The practical unit of electric resistance. (2) Such a resistance as would limit the flow of electricity under an electro-motive force of one volt to a current of one ampere, or one coulomb per second.

**Ohm's Law**—The strength of a continuous electric current in any circuit is directly proportional to the electro-motive force acting on that circuit, and inversely proportional to the resistance of the circuit.

**Watt**—(1) A unit of electric power. (2) A volt ampere. (3) The power developed when 44.25 foot pounds of work are done in a minute, or 0.7375 foot pounds of work is done in a second.

**Dynamo**—A dynamo-electric machine or generator.

**Motor Electric**—A device for transforming electric power into mechanical power.

**Magneto**—(1) A magneto generator. (2) A small magneto-electric dynamo machine.

**Galvanometer**—An apparatus for measuring the strength of an electric current by the deflection of a magnet needle.

**Transformer**—An induction coil employed either for raising or for lowering electric pressure.

**Regulating Box**—A rheostat inserted in the field circuit of a generator or motor for regulating the current passing through the field magnet coils.

**Safety Fuse**—A wire, bar, plate, or strip of readily fusible metal, capable of conducting without fusing the current ordinarily employed on the circuit, but which fuses and thus automatically breaks the circuit on the passage of an abnormally strong current.

**Short Circuit**—(1) A shunt or by-path of negligible or comparatively small resistance placed around any part of an electric circuit through which so much of the current passes as to virtually cut out the parts of the circuit to which it acts as a shunt. (2) An accidental direct connection between the mains or main terminals of a dynamo or system, producing a heavy load of current.

**Phase**—The fractional part of a period which has elapsed since a vibrating body last passed through the extreme point of its path in the positive direction.

**Direct Current**—A current whose direction is constant, as distinguished from an alternating current.

**Alternating Currents**—(1) Currents which flow alternately in opposite directions. (2) Currents whose directions are periodically reversed.

**Multiple Circuit**—A circuit in which a number of separate sources or separate devices, or both, have all their positive poles connected to a single positive lead or conductor, and all their negative poles connected to a single negative lead or conductor.

**Series Circuit**—A circuit in which the separate sources or separate electro-receptive devices, or both, are so placed that the circuit produced in it or passed through it passes successively through the entire circuit from the first to the last.

### BOOKS FOR INGENIOUS BOYS.

**Amateur Mechanic's Workshop.**

**American Boy's Handy Book,**  
by Beard.

**Jack of All Trades,** by Beard.  
**How to Make Common Things,** by Bower.

**Textbook of Elementary Mechanics,** by Dana.

**Bench Work in Wood,** by Goss.

**Amongst Machines,** by Lukin.  
**Young Mechanic,** by Lukin.

**Boy Engineer,** by Lukin.  
**Mechanical Drawing Self-Taught,** by Rose.

**Mechanic's Own Book,** by Spon.

**A Boy's Workshop,** by Waite.

**Wood-working for Beginners,**  
by Wheeler.

**Useful to Know**

## A GUIDE FOR FARMERS.

To find the number of tons of hay in a mow or stack, multiply together the length, breadth and depth in feet, and divide the product by 400 or 500; in a deep mow about 400 cubic feet of hay will make a ton, while on a scaffold or shallow mow, it will require 500 cubic feet.

To find the number of bushels of potatoes, apples, etc., in a bin, multiply the cubic contents by 8 and point off one figure in the product.

To find the number of bushels of shelled corn in a crib or bin of corn in the ear, divide the cubic contents by 2; to find the number of bushels of ear corn, divide the cubic contents in feet by  $2\frac{3}{4}$ , as one bushel of ear corn is contained in  $2\frac{3}{4}$  cubic feet. A wagon box 10 feet long, 3 feet wide and 25 inches deep, will hold 27.8 bushels ear corn, or 50.2 bushels shelled corn.

To ascertain the weight of cattle, measure the girth close behind the shoulder, and the length from the fore part of the shoulder blade along the back to the bone at the tail, which is in a vertical line with the buttock, both in feet. Multiply the square of the girth, expressed in feet, by five times the length, and divide the product by 21; the quotient is the weight, nearly, of the four quarters, in Imperial stones of 14 pounds avoirdupois. In very fat cattle, the quarters will be about 1-20th more, while in very lean ones, they will be about 1-20th less.

## SOME EVERYDAY ARITHMETIC—MISCELLANEOUS

## TABLE OF SOLIDS.

128 solid feet (4x4x8) make 1 cord.

40 solid feet of round timber make 1 tun.

50 solid feet of hewn timber make 1 tun.

1 11-45 solid feet of shelled corn make 1 bushel.

6 2-9 solid feet of shelled corn make 1 barrel.

2 22-45 solid feet of ear corn make 1 bushel.

12 4-9 solid feet of ear corn make 1 barrel.

28 $\frac{3}{8}$  solid inches make 1 wine pint.

231 solid inches make 1 wine gallon.

282 solid inches make 1 beer gallon.

268 4-5 solid inches make 1 gallon, dry measure.

1828 solid inches make 1 bushel unslaked lime, coal or coke.

A box 14x14x13 $\frac{3}{4}$  inches in the clear holds 1 bushel.

A box 14x7x13 $\frac{3}{4}$  inches in the clear holds  $\frac{1}{2}$  bushel.

A box 7x7x13 $\frac{3}{4}$  inches in the clear holds 1 peck.

A bucket or other cylindrical vessel 7 inches in diameter and 6 inches deep holds 1 gallon, wine measure, and a similar vessel 7 inches in diameter and 7 1-3 inches deep holds 1 gallon, beer measure.

**METRIC SYSTEM.**

**Apothecaries.**

- 10 milligrams=1 centigram.
- 10 centigrams=1 decigram.
- 10 decigrams=1 gram.
- 10 grams=1 decagram.
- 10 decagrams=1 hectogram.
- 10 hectograms=1 kilogram.
- 10 kilograms=1 myriagram.
- 10 myriagrams=1 quintal.
- 10 quintals=1 ton (metric).

**Linear Measure.**

- 10 millimeters=1 centimeter.
- 10 centimeters=1 decimeter.
- 10 decimeters=1 meter.
- 10 meters=1 decameter.
- 10 decameters=1 hectometer.
- 10 hectometers=1 kilo.

**Cubic and Capacity Measure.**

- 10 milliliters=1 centiliter.
- 10 centiliters=1 deciliter.
- 10 deciliters=1 liter.
- 10 liters=1 decaliter.
- 10 decaliters=1 hectoliter.
- 10 hectoliters=1 kiloliter.

**TABLE OF BOX MEASURE.**

A box 24 inches by 16 inches square, and 28 inches deep, will contain a barrel, or 10,752 cubic inches.

A box 24 inches by 16 inches square, and 14 inches deep, will contain a half-barrel, or 5376 cubic inches.

A box 16 inches by 16.8 inches square, and 8 inches deep, will contain a bushel, or 2150.4 cubic inches.

A box 12 inches by 11.2 inches square, and 8 inches deep, will contain a half-bushel, or 1075.2 cubic inches.

A box 8 inches by 8.4 inches square, and 8 inches deep, will contain 1 peck, or 537.6 cubic inches.

A box 8 inches by 8 inches square, and 4.2 inches deep, will contain one-half peck, or 268.8 cubic inches.

A box 7 inches by 4 inches square, and 4.8 inches deep, will contain a half-gallon, or 134.4 cubic inches.

A box 4 inches by 4 inches square, and 4.2 inches deep, will contain 1 quart, or 67.2 cubic inches.

The measures all come within a small fraction of a cubic inch of being perfectly accurate; as near, indeed, as any measures of capacity have ever yet been made for common use. The difficulty of making them with absolute exactness has never yet been overcome.

**SURFACE MEASURE.**

The surface units in the metric system are the linear units squared, and for land measures 100 square meters are called the "ar" (for area).

100 ars=1 hectar.

One acre contains 160 square rods, 4840 square yards, 45,560 square feet. One rod contains 30¼ square yards, 272¼ square feet. One square yard contains nine square feet. The side of a square must measure as follows to contain:

	Feet	Rods	Paces
10 acres.....	660.00	40.00	
1 acre .....	208.71	12.65	64
Half acre...	147.58	8.95	45
Third acre..	120.50	7.30	37
Fourth acre.	104.38	6.32	32
Eighth acre.	73.79	4.47	22½

To double the length of the side makes four times the area of the field.

### DOMESTIC WEIGHTS AND MEASURES.

**Apothecaries' weight**—20 grains=1 scruple, 3 scruples=1 dram, 8 drams=1 ounce, 12 ounces=1 pound.

**Avoirdupois weight (short ton)**—27 11-32 grains=1 dram, 16 drams=1 ounce, 16 ounces=1 pound, 25 pounds=1 quarter, 4 quarters=1 hundredweight, 20 hundredweights=1 ton (2000 pounds).

**Avoirdupois weight (long ton)**—27 11-32 grains=1 dram, 16 drams=1 ounce, 16 ounces=1 pound, 112 pounds=1 hundredweight, 20 hundredweights=1 ton (2240 pounds).

**Troy weight**—24 grains=1 pennyweight, 20 pennyweights=1 ounce, 12 ounces=1 pound.

**Circular measure**—60 seconds=1 minute, 60 minutes=1 degree, 30 degrees=1 sign, 12 signs=1 circle.

**Cubic measure**—1728 cubic inches=1 cubic foot, 27 cubic feet=1 cubic yard.

**Dry measure**—2 pints=1 quart, 8 quarts=1 peck, 4 pecks=1 bushel.

**Liquid measure**—4 gills=1 pint, 2 pints=1 quart, 4 quarts=1 gallon, 31½ gallons=1 barrel, 2 barrels=1 hoghead.

**Fluid measure**—The minim=0.95 grain, 60 minims=1 fluid drachm, 8 fluid drachms=1 fluid ounce (455.69 grains) or 480 minims.

**Long measure**—12 inches=1 foot, 3 feet=1 yard, 5½ yards=1 rod or pole, 40 rods=1 furlong, 8 furlongs=1 statute mile, 3 miles=1 league.

**Nautical measure**—6 feet=1 fathom, 608 fathoms=1 cable length, 7½ cable lengths=1 mile, 5280 feet=1 statute mile, 6080.27 feet=1 nautical mile.

**Square measure**—144 square inches=1 square foot, 9 square

feet=1 square yard, 30¼ square yards=1 square rod or perch, 40 square rods=1 rood, 4 roods=1 acre, 640 acres=1 square mile, 36 square miles (6 miles square)=1 township.

**Time measure**—60 seconds=1 minute, 60 minutes=1 hour, 24 hours=1 day, 7 days=1 week, 4 weeks=1 lunar month, 365 days=1 year, 366 days=1 leap year.

**Diamond weight**—4 grains=1 carat, 16 parts=1 grain=0.8 Troy grain, carat=3.2 Troy grains.

**Measure of number**—12 units=1 dozen, 12 dozen=1 gross, 20 units=1 score.

**Mariner's measure**—6 feet=1 fathom, 120 fathoms=1 cable. A nautical mile or knot, 6080.27, while a common mile is 5280 feet.

**Iron, lead, etc.**—14 pounds=1 stone, 21½ stone=1 pig, 8 pigs=1 fother.

**Beef, pork, etc.**—200 pounds=1 barrel, 196 pounds (flour)=1 barrel, 100 pounds (fish)=1 quintal.

The commercial weights and measures of the United States are the avoirdupois pound (7000 grains)=16 ounces of 437.5 grains each. The wine gallon (231 cubic inches)=4 quarts, or 8 pints of 16 fluid ounces to each pint.

**Various miles**—The distance called a mile varies greatly in different countries. Its length in yards is as follows: Norway 12,182, Sweden 11,660, Hungary 9139, Switzerland 8648, Austria 8297, Prussia 8238, Poland 8100, Italy 2025, England and the United States 1760, Spain 1522, Netherlands 1094. The nautical mile is 1-60th the length of a degree at the equator, or 2025 yards.

**Cloth measure**—2¼ inches=1 nail, 4 nails=1 quarter, 4 quarters=1 yard.

Chain measure—7.92 inches=1 link, 25 links=1 rod, 100 links=1 chain, 80 chains=1 mile, 10 square chains=1 acre.

Paper measure—24 sheets=1 quire, 20 quires=1 ream, 2 reams=1 bundle, 5 bundles=1 bale.

Various units—A cubit is 4 hands and a half, or 1 foot and a half. A yard is 36 inches or 2 cubits. A square yard is 9 square feet. A cubical yard is 27 cubical feet. An ell is 1 yard and a quarter, or 45 inches. A geometrical space is 5 feet. A fathom is 6 feet, or 2 yards. A square is 100 square feet. A pace is 3 feet. A palm is 3 inches. A hand is 4 inches. A span is 6 inches. A Bible cubit is 21.8 inches.

Liquids—1 gallon oil weighs 9.32 pounds avoirdupois, 1 gallon distilled water 10.32 pounds, 1 gallon proof spirits 9.08 pounds.

#### EQUIVALENTS.

1 acre equals .4047 hectare.  
 1 bushel equals 35.24 liters.  
 1 centimeter equals .3937 inch.  
 1 cubic foot equals .023 cubic meter.  
 1 cubic inch equals 16.39 cubic centimeters.  
 1 cubic meter equals 35.31 cubic feet.  
 1 cubic yard equals .7645 cubic meter.  
 1 foot equals 30.48 centimeters.

1 gallon equals 3.785 liters.  
 1 grain equals .0648 gram.  
 1 gram equals 15.43 grains.  
 1 hectare equals 2.471 acres.  
 1 inch equals 25.40 millimeters.  
 1 kilogram equals 2.205 pounds.  
 1 kilometer equals .6214 mile.  
 1 liter equals .9081 quart (dry).  
 1 liter equals 1.057 quarts (liquid).  
 1 yard equals .9144 meter.  
 1 meter equals 3.281 feet.  
 1 mile equals 1.609 kilometers.  
 1 millimeter equals 0.394 inch.  
 1 ounce (avoirdupois) equals 28.35 grams.  
 1 ounce (Troy) equals 31.10 grams.  
 1 peck equals 8.809 liters.  
 1 pint equals .4732 liter.  
 1 pound equals .4536 kilogram.  
 1 quart (dry) equals 1.101 liters.  
 1 quart (liquid) equals .9464 liter.  
 1 square centimeter equals .1550 square inch.  
 1 square foot equals .0929 square meter.  
 1 square inch equals 6.452 square centimeters.  
 1 square meter equals 1.196 square yards.  
 1 square meter equals 10.76 square feet.  
 1 square yard equals .8361 square meter.  
 1 ton (2000 pounds) equals .9072 metric ton.  
 1 ton (2240 pounds) equals 1.017 metric tons.  
 1 ton (metric) equals .9842 ton (2240 pounds).

#### GREAT DISASTERS AT SEA.

Steamship Bourgogne was lost in 1898, with 545 lives. The steamer Elbe, in 1896, was lost with 334. In 1895, the Victoria was rammed by the Camperdown and went down with 430 men. In 1899, a British excursion steamer, the Stella, struck a reef and 104 people were drowned. In 1902, a German excursion boat sank in the Elbe river with 112 people. But all five exceed by less than 500 the death rate of the General Slocum, in June, 1904, when more than 1000 men, women and children were drowned, burned or crushed, besides many injured.

## SPECIFIC GRAVITY—COMPARED WITH WATER.

Liquids.		Sundries.	
Water .....	100	Indigo .....	77
Sea water .....	103	Ice .....	92
Dead sea .....	124	Gunpowder .....	93
Alcohol .....	84	Butter .....	94
Olive oil .....	92	Clay .....	120
Turpentine .....	99	Coal .....	130
Wine .....	100	Optum .....	134
Urine .....	101	Honey .....	145
Cider .....	102	Ivory .....	183
Beer .....	102	Sulphur .....	203
Woman's milk .....	102	Porcelain .....	226
Cow's milk .....	103	Marble .....	270
Goat's milk .....	104	Chalk .....	279
Porter .....	104	Glass .....	289
Timber.		Metals and Stones.	
Cork .....	24	Granite .....	278
Poplar .....	38	Diamond .....	353
Fir .....	55	Zinc .....	691
Cedar .....	61	Cast iron .....	721
Pear .....	66	Tin .....	729
Walnut .....	67	Bar iron .....	779
Cherry .....	72	Steel .....	783
Maple .....	75	Brass .....	840
Apple .....	79	Copper .....	895
Ash .....	84	Silver .....	1,047
Beech .....	85	Lead .....	1,135
Mahogany .....	106	Mercury .....	1,357
Oak .....	117	Gold .....	1,926
Ebony .....	133	Platina .....	2,150

To get weight of a cubic foot of above, multiply gravity by 10—thus, a cubic foot of ice weighs 920 ounces avoirdupois.

## FREEZING, FUSING AND BOILING POINTS.

	Fahr.		Fahr.
Olive oil freezes at.....	50	Sulphur fuses at .....	239
Quicksilver freezes at.....	-39	Tin fuses at .....	442
Water freezes at.....	32	Zinc fuses at .....	773
Copper fuses at.....	2,200	Alcohol boils at.....	167
Gold fuses at .....	2,518	Ether boils at .....	96
Iron fuses at .....	2,800	Iodine boils at .....	347
Lead fuses at .....	617	Water boils at .....	212
Silver fuses at.....	1,832		



## TIME ON SHIPBOARD.

One bell—12.30, 4.30 and 8.30, either morning or evening.

Two bells—1, 5 and 9, either morning or evening.

Three bells—1.30, 5.30 and 9.30, either morning or evening.

Four bells—2, 6 and 10, either morning or evening.

Five bells—2.30, 6.30 and 10.30, either morning or evening.

Six bells—3, 7 and 11, either morning or evening.

Seven bells—3.30, 7.30 and 11.30, either morning or evening.

Eight bells—4, 8 and 12, either morning or evening.

The day on shipboard begins at noon, and is divided into seven watches.

Afternoon watch—12 noon to 4 p. m.

First dog watch—4 p. m. to 6 p. m.

Second dog watch—6 p. m. to 8 p. m.

First watch—8 p. m. to 12 midnight.

Middle watch—12 midnight to 4 a. m.

Morning watch—4 a. m. to 8 a. m.

Forenoon watch—8 a. m to 12 noon.

## THE VALUE OF FOREIGN MONEY

Varies from month to month, but averages as follows:

Austria-Hungary—Crown, equals .....	\$0.203, say	20c
Belgium—Franc, equals .....	.193, "	20c
France—Franc, equals .....	.193, "	20c
Germany—Mark, equals .....	.238, "	24c
Great Britain—Pound, equals .....	4.84	
India—Rupee, equals .....	.32	
Italy—Lira, equals .....	.193, "	20c
Japan—Yen, equals .....	.50	
Russia—Ruble, equals .....	.515, "	52c
Spain—Peseta, equals .....	.193, "	20c
Switzerland—Franc, equals .....	.193, "	20c

## WORTH KNOWING.

There are 640 acres in a square mile.

A barrel of pork weighs 200 pounds.

A barrel of flour weighs 196 pounds.

Sound moves at the rate of 743 miles an hour.

Storm clouds move 36 miles an hour.

Light moves 192,000 miles per second.

Five hundred and eighty-seven languages are spoken in Europe.

Australia has an artesian well 500 feet deep.

**MISCELLANEOUS TABLE  
OF THINGS, DIS-  
TANCES, BOOKS,  
ETC.**

- A book composed of sheets folded into 2 leaves is a folio.  
A book composed of sheets folded into 4 leaves is a quarto.  
A book composed of sheets folded into 8 leaves is an octavo (8vo).  
A book composed of sheets folded into 12 leaves is a duodecimo (12mo).  
A book composed of sheets folded into 16 leaves is a 16mo.  
12 units make 1 dozen.  
12 dozen make 1 gross.  
12 gross (144 dozen) make 1 great gross.  
20 units make 1 score.  
56 pounds of butter make 1 firkin.  
100 pounds of fish make 1 quintal.  
196 pounds of flour make 1 barrel.  
200 pounds of beef, pork, shad or salmon make 1 barrel.  
24 sheets of paper make 1 quire.  
20 quires make 1 ream.  
2 reams make 1 bundle.  
5 bundles make 1 bale.  
3 barleycorns make 1 inch.  
18 inches make 1 cubit.  
22 inches make 1 sacred cubit.  
9 gallons make 1 English firkin.  
2 firkins make 1 kilderkin.  
2 kilderkins make 1 barrel.  
25 pounds make 1 keg (powder).  
100 pounds make 1 cental (grain measure).  
100 pounds make 1 cask (raisin measure).  
256 pounds make 1 barrel of soap.  
280 pounds make 1 barrel of salt.  
31½ gallons make 1 barrel (wine measure).  
42 gallons make 1 tierce (wine measure).  
63 gallons make 1 hogshead (wine measure).  
84 gallons make 1 puncheon (wine measure).  
126 gallons make 1 pipe (wine measure).  
252 gallons make 1 tun (wine measure).  
8 bushels of wheat (of 70 pounds each) make 1 quarter (European measure).  
8 bushels of salt make 1 hogshead.  
36 bushels of coal make 1 chaldron (English).  
32 bushels make 1 chaldron (American).  
14 pounds make 1 stone.  
21½ stones make 1 pig (iron).  
8 pigs make 1 fother.  
24¾ cubic feet (masonry) make 1 perch.  
100 square feet (carpentry) make 1 square.  
1760 yards (5280 feet) make 1 statute mile.  
2028.63 yards (6085.9 feet) make 1 nautical mile.  
3 miles make 1 league.  
69 1-6 statute miles make 1 degree (of latitude).  
60 geographical miles make 1 degree (of latitude).  
360 degrees make 1 circle.  
60 pairs of shoes make 1 case.  
9 inches make 1 quarter (of a yard).  
3 quarters make 1 ell (Flemish).  
5 quarters make 1 ell (English).  
6 quarters make 1 ell (French).  
4 inches make 1 hand (measuring horses).  
6 feet make 1 fathom (depth of water).  
120 fathoms make 1 cable-length.  
7 1-3 cable lengths make 1 mile.  
640 acres make 1 square mile.  
36 square miles make 1 township.

## **Directory of Agricultural Colleges, Experiment Stations and Societies**

### AGRICULTURAL AND MECHANICAL COLLEGES.

The first agricultural college in the United States was established through a land-grant from Congress for that purpose in 1862. There are now 50 agricultural colleges for whites (many of which admit negroes) and 16 for negroes, scattered through the various states. The total number of teachers in 1901-2, men and women, was 3692; of students, men 35,404, women 11,643; number of graduates in 1902, 3466 men and 975 women. The total value of property is \$69,660,303; the total income for year ending June, 1902, was \$9,167,059, of which the states and territories provided 46.6 per cent, the federal government 21.8 per cent, and 31.6 per cent from endowment funds, tuition and miscellaneous sources.

### AGRICULTURAL COLLEGES AND OTHER INSTITUTIONS IN THE UNITED STATES HAVING COURSES IN AGRICULTURE.

Alabama—Auburn, Alabama Polytechnic Institute.

Normal, Agricultural and Mechanical College of Negroes.

Arizona—Tucson, University of Arizona.

Arkansas—Fayetteville, University of Arkansas.

Pine Bluff, Branch Normal College.

California—Berkeley, University of California.

Colorado—Fort Collins, State Agricultural College of Colorado.

Connecticut—Storrs, Connecticut Agricultural College.

Delaware—Newark, Delaware College.

Dover, State College for Colored Students.

Florida—Lake City, Florida Agricultural College.

Tallahassee, Florida State Normal and Industrial College.

Georgia—Athens, Georgia State College of Agriculture and Mechanic Arts.

College, Georgia State Industrial College.

Idaho—Moscow, University of Idaho.

Illinois—Urbana, University of Illinois.

Indiana—Lafayette, Purdue University.

Iowa—Ames, Iowa State College of Agriculture and Mechanic Arts.

Kansas—Manhattan, Kansas State Agricultural College.

Kentucky—Lexington, Agricultural and Mechanical College of Kentucky.

Frankfort, State Normal School for Colored Students.

Louisiana—Baton Rouge, Louisiana State University and Agricultural and Mechanical College.

- New Orleans, Southern University and Agricultural and Mechanical College.
- Maine—Orono, the University of Maine.
- Maryland—College Park, Maryland Agricultural College.  
Princess Anne, Princess Anne Academy, Eastern Branch, Maryland Agricultural College.
- Massachusetts—Amherst, Massachusetts Agricultural College.
- Michigan—Agricultural College, Michigan State Agricultural College.
- Minnesota—St. Anthony Park, the University of Minnesota.
- Mississippi—Agricultural College, Mississippi Agricultural and Mechanical College.  
Westside, Alcorn Agricultural and Mechanical College.
- Missouri—Columbia, the University of Missouri.  
Jefferson City, Lincoln Institute.
- Montana—Bozeman, the Montana College of Agriculture and Mechanic Arts.
- Nebraska—Lincoln, the University of Nebraska.
- Nevada—Reno, Nevada State University.
- New Hampshire—Durham, the New Hampshire College of Agriculture and Mechanic Arts.
- New Jersey—New Brunswick, Rutgers Scientific School (the New Jersey State College for the Benefit of Agriculture and Mechanic Arts).
- New Mexico—Mesilla Park, New Mexico College of Agriculture and Mechanic Arts.
- New York—Ithaca, Cornell University.
- North Carolina—West Raleigh, North Carolina College of Agriculture and Mechanic Arts.  
Greensboro, Agricultural and Mechanical College for the Colored Race.
- North Dakota—Agricultural College, North Dakota Agricultural College.
- Ohio—Columbus, Ohio State University.
- Oklahoma—Stillwater, Oklahoma Agricultural and Mechanical College.  
Langston, Agricultural and Normal University.
- Oregon—Corvallis, Oregon State Agricultural College.
- Pennsylvania—State College, Pennsylvania State College.
- Rhode Island—Kingston, Rhode Island College of Agriculture and Mechanic Arts.
- South Carolina—Clemson College, Clemson Agricultural College.  
Orangeburg, the Colored Normal, Industrial, Agricultural and Mechanical College of South Carolina.
- South Dakota—Brookings, South Dakota Agricultural College.
- Tennessee—Knoxville, University of Tennessee.
- Texas—College Station, State Agricultural and Mechanical College of Texas.  
Prairie View, Prairie View State Normal School.
- Utah—Logan, Agricultural College of Utah.
- Vermont—Burlington, University of Vermont and State Agricultural College

Virginia—Blacksburg, Virginia Agricultural and Mechanical College and Polytechnic Institute.  
 Hampton, Hampton Normal and Agricultural Institute.  
 Washington—Pullman, Washington Agricultural College and School of Science.  
 West Virginia—Morgantown, West Virginia University.  
 Institute, West Virginia Colored Institute.  
 Wisconsin—Madison, University of Wisconsin.  
 Wyoming—Laramie, University of Wyoming.

### AGRICULTURAL EXPERIMENT STATIONS IN THE U. S.

Alabama—Auburn, Uniontown (Canebrake), Tuskegee.	Nebraska—Lincoln.
Arizona—Tucson.	Nevada—Reno.
Arkansas—Fayetteville.	New Hampshire—Durham.
California—Berkeley.	New Jersey—New Brunswick (state), New Brunswick (college).
Colorado—Fort Collins.	New Mexico—Mesilla Park.
Connecticut—New Haven (state), Storrs.	New York—Geneva (state), Ithaca (Cornell).
Delaware—Newark.	North Carolina—Raleigh.
Florida—Lake City.	North Dakota—Agricultural College.
Georgia—Experiment.	Ohio—Wooster.
Idaho—Moscow.	Oklahoma—Stillwater.
Illinois—Urbana.	Oregon—Corvallis.
Indiana—Lafayette.	Pennsylvania—State College.
Iowa—Ames.	Rhode Island—Kingston.
Kansas—Manhattan.	South Carolina—Clemson College.
Kentucky—Lexington.	South Dakota—Brookings.
Louisiana—New Orleans (fruit), Baton Rouge (state), Calhoun.	Tennessee—Knoxville.
Maine—Orono.	Texas—College Station.
Maryland—College Park.	Utah—Logan.
Massachusetts—Amherst.	Vermont—Burlington.
Michigan—Agricultural College.	Virginia—Blacksburg.
Minnesota—St. Anthony Park.	Washington—Pullman.
Mississippi—Agricultural College.	West Virginia—Morgantown.
Missouri—Columbia, Mountain Grove (fruit).	Wisconsin—Madison.
Montana—Bozeman.	Wyoming—Laramie.

### NATIONAL ASSOCIATIONS OF FARMERS.

American Cane Growers' Association—D. D. Colcock, secretary, New Orleans, La.  
 New England Tobacco Growers' Association—S. C. Hardin, secretary, Glastonbury, Ct.  
 Interstate Cotton Growers' Association—J. P. Allison, secretary, Concord, Ga.  
 National Nut Growers' Association—J. F. Wilson, secretary, Poulan, Ga.

American Shropshire Registry Association—Mortimer Levering, secretary and treasurer, Lafayette, Ind.

Hampshire Down Breeders' Association of America—C. A. Tyler, secretary, Nottawa, Mich.

American Rambouillet Sheep Breeders' Association—Dwight Lincoln, secretary, Milford Center, O.

American Suffolk Flock Registry Association—George W. Franklin, secretary, Des Moines, Ia.

Black Top Spanish Merino Sheep Breeders' Association—R. P. Berry, secretary, Washington, Pa.

Dorset Horn Sheep Breeders' Association of America—M. A. Cooper, secretary, Washington, Pa.

National Delaine Merino Sheep Breeders' Association—J. E. Johnson, secretary, Cannonsburg, Pa.

Dickinson Merino Sheep Record Company—H. G. McDowell, secretary, Canton, O.

Hampshire Down Breeders' Association—C. A. Tyler, Nottawa, Mich.

Improved Black Top Merino Sheep Breeders' Association—L. M. Crothers, secretary, Crothers, Pa.

Improved Delaine Merino Sheep Breeders' Association—George A. Henry, secretary, Bellefontaine, O.

Michigan Merino Sheep Breeders' Association—E. N. Ball, secretary, Hamburg, Mich.

National Lincoln Sheep Breeders' Association—Bert Smith, secretary, Charlotte, Mich.

National Improved Saxony Sheep Breeders' Association—John T. Clarke, secretary, Washington, Pa.

National Merino Sheep Register Association—R. O. Logan, secretary, Montgomery, Mich.

New York State American Merino Sheep Breeders' Association—J. Horatio Earle, secretary, Skaneateles, N. Y.

Ohio Spanish Merino Sheep Breeders' Association.  
Standard Delaine Spanish Merino Association—S. M. Cleaver, secretary, East Bethlehem, Pa.

United States Merino Sheep Breeders' Registry Association—J. A. B. Walker, secretary, Mountair, Pa.

Vermont Atwood Merino Sheep Club Register—George Hammond, secretary, Middlebury, Vt.

Vermont Merino Sheep Breeders' Association—C. A. Chapman, secretary, Harrisburg, Vt.

### SWINE BREEDERS' ASSOCIATIONS.

American Berkshire Association—Frank S. Springer, secretary, Springfield, Ill.

American Duroo-Jersey Swine Breeders' Association—T. B. Pearson, secretary, Thornton, Ind.

American Essex Association—F. M. Strout, secretary, McLain, Ill.

American Small Yorkshire Club—George W. Harris, secretary, 3409 Third avenue, New York city.

Cheshire Swine Breeders' Association—B. R. Badger, secretary, Ouaquaga, N. Y.

Standard Chester White Record Association—W. H. Morris, secretary, Indianapolis, Ind.

American Poland-China Record Company—W. M. McFadden, secretary, Chicago, Ill.

Central Poland-China Record Association—W. H. Morris, secretary, Indianapolis, Ind.

Ohio Poland-China Record Company—A. M. Brown, Dayton, O.

Standard Poland-China Record Association—G. F. Woodworth, secretary, Maryville, Mo.

Victoria Swine Breeders' Association—H. Davis, secretary, Dover, Ind.

Suffolk Swine Association—W. F. Watson, secretary, Winchester, Ind.

National Duroc-Jersey Record Association—Robert J. Evans, secretary, El Paso, Ill.

American Tamworth Swine Association—E. N. Ball, Hamburg, Mich.

The American Yorkshire Club—E. W. Wilcox, secretary, Hugo, Minn.

#### DAIRY ASSOCIATIONS.

National Association of State Dairy and Food Departments—R. M. Allen, secretary, Lexington, Ky.

National Dairy Union—Charles Y. Knight, secretary, 154 Lake street, Chicago.

National Creamery Butter Makers' Association—E. Sudendorf, secretary, Elgin, Ill.

New England Milk Producers' Union—W. A. Hunter, secretary, 10 Florence street, Worcester, Mass.

Five States Milk Producers' Association—H. T. Coon, secretary, Homer, N. Y.

California Creamery Operators' Association—W. H. Saytor, secretary, San Francisco.

California Dairy Association—Samuel E. Watson, secretary, San Francisco.

Connecticut Dairymen's Association—J. E. Noble, secretary, Hartford.

Connecticut Creamery Association—E. B. Little, secretary, Somers.

Georgia Dairymen's Association—M. L. Duggan, secretary, Sparta.

Idaho Dairy and Pure Food Association—A. E. Gipson, secretary, Caldwell.

Illinois Dairymen's Association—George Caven, secretary, 154 Lake street, Chicago.

Chicago Milk Shippers' Union—H. B. Farmer, secretary, 84 La Salle street, Chicago.

Indiana State Dairy Association—H. E. Van Norman, secretary, Lafayette.

Iowa State Dairy Association—P. H. Kieffer, secretary, Manchester.

Kansas State Dairy Association—T. A. Borman, secretary,  
505 Polk street, Topeka.

Maine Dairymen's Association—L. W. Dyer, secretary,  
Woodfords.

Massachusetts Creamery Association—A. M. Lyman, secretary,  
Montague.

Michigan Dairymen's Association—S. J. Wilson, secretary,  
Flint.

Michigan Grand Traverse Dairymen's Association—D. H.  
McMullen, secretary, Traverse City.

Minnesota State Dairymen's Association—J. R. Morley, secretary,  
Owatonna.

Minnesota State Butter and Cheese Makers' Association—  
C. I. Cole, secretary, Rockford.

Missouri Dairy Association—W. W. Marple, president, St.  
Joseph.

Nebraska Dairymen's Association—S. C. Bassett, secretary,  
Gibbon.

(New Hampshire) Granite State Dairymen's Association—  
Ivan C. Weld, secretary, Durham.

New Jersey State Dairy Union—G. L. Gillingham, secretary,  
Moorestown.

New York State Dairymen's Association—Robert McAdam,  
secretary, Rome.

North Dakota State Dairymen's Association—E. E. Kauf-  
man, secretary, Fargo.

Ohio State Dairymen's Association—D. A. Crouner, secretary,  
West Jefferson.

Oregon Dairymen's Association—F. L. Kent, secretary, Cor-  
vallis.

Pennsylvania Dairy Union—Dr. M. E. Conard, secretary,  
West Grove.

Creamery Association of Eastern Pennsylvania and Vicinity  
—G. R. Meloney, secretary, 1937 Market street, Philadelphia.

South Carolina—G. M. Davis, secretary, Clinton.

South Dakota Dairy and Butter Makers' Association—C. P.  
Sherwood, secretary, Desmet.

Texas Dairy and Live Stock Association—G. E. Adams, secretary,  
Florence.

Utah Dairymen's Association—C. Z. Harris, secretary, Rich-  
mond.

Vermont Dairymen's Association—F. L. Davis, secretary,  
North Pomfret.

Washington State Dairymen's Association—Mrs. E. Car-  
michael, secretary, Yakima.

Wisconsin Dairymen's Association—George W. Burchard,  
secretary, Fort Atkinson.

Wisconsin Cheesemakers' Association—W. S. Baer, secretary,  
Madison.

Wisconsin Butter Makers' Association—F. B. Fulmer, secretary,  
Ettrick.



## POULTRY ASSOCIATIONS.

- American Dorking Club—Watson Westfall, secretary, Sayre, Pa.
- American Buff Plymouth Rock Club—W. C. Denny, secretary, Buffalo, N. Y.
- American Black Minorca Club—W. D. Davis, secretary and treasurer, North Dana, Mass.
- American Cochin Club—Arthur R. Sharp, secretary, Taunton, Mass.
- National Exhibition Game and Game Bantam Club—W. W. Withee, secretary, Lacrosse, Wis.
- American Houdan Club—Thomas F. Rigg, secretary, Iowa Falls, Ia.
- American Leghorn Club—W. W. Babcock, secretary, Bath, N. Y.
- American Plymouth Rock Club—H. P. Schwab, secretary, Rochester, N. Y.
- American Indian Game Club—C. S. Whitney, secretary, Corfu, N. Y.
- Eastern White Wyandot Club—W. E. Mack, secretary, Woodstock, Vt.
- Minorca Club of Northwest—Dr. H. B. Fay, Minneapolis, Minn.
- National Bantam Association—Charles Jehl, secretary, Elberon, N. J.
- New England Light Brahma Club—G. W. Cromack, secretary, North Windham, Vt.
- National Fanciers' Association—Fred L. Kinney, secretary, Morgan Park, Ill.
- Boston Poultry Association—C. Minot Weld, secretary, 131 Devonshire street, Boston, Mass.
- Wolverine Poultry, Pigeon and Pet Stock Association—Gus Williams, secretary, Bay City, Mich.
- St. Louis Fanciers' Association—R. C. H. Hallock, secretary, 6317 Clifton avenue, St. Louis, Mo.
- Mid-Continental Poultry Association—F. M. Slutz, secretary, Kansas City, Mo.
- Interstate Poultry Association—R. Horrocks, secretary, Falls City, Neb.
- Buffalo Poultry Association—E. C. Pease, secretary, Buffalo, N. Y.
- Madison Square Garden (New York) Poultry and Pigeon Association—H. V. Crawford, secretary, Montclair, N. J.
- Northern Ohio Poultry and Pet Stock Association—F. R. Hunt, secretary, Cleveland, O.
- Buckeye Poultry Association—George B. Wetzel, secretary, Dayton, O.
- Tri-State Poultry Association—J. A. McIntosh, secretary, East Liverpool, O.
- Pittsburg Fanciers' Club—A. P. Robinson, secretary, 110 Second avenue, Pittsburg, Pa.
- Piedmont Poultry Association—B. W. Getsinger, secretary, Spartansburg, S. C.

Nashville Poultry Association—Nashville, Tenn.  
 Tacoma Poultry Association—A. Hartley, Fern Hill, Wash.  
 Western Bantam Breeders' Association—A. E. Brown, secretary, Morgan Park, Ill.

#### STATE POULTRY ASSOCIATIONS.

Colorado—F. E. Kimball, secretary, Denver.  
 Illinois—Edward Craig, secretary, Albion.  
 Kansas—J. W. F. Hughes, Topeka.  
 Kentucky—Charles Hess, secretary, Louisville.  
 Louisiana—J. D. Schmidt, secretary, 126 Carondelet street, New Orleans.  
 Michigan—John A. Grover, secretary, Concord.  
 Minnesota—C. L. Smith, secretary, Box 23, Minneapolis.  
 Missouri—H. P. Mason, secretary, Fayette.  
 Nebraska—Luther P. Ludden, secretary, Lincoln.  
 New York—E. M. Santee, secretary, Cortland.  
 North Carolina—J. S. Jeffrey, secretary, Raleigh.  
 Ohio—D. C. Hale, secretary, Dayton.  
 Oklahoma—Samuel M. Lyon, secretary, Guthrie.  
 Pennsylvania—George C. Watson, secretary, State College.  
 Rhode Island—William I. Brown, secretary, Providence.  
 Texas—S. J. Hoppin, secretary, Dallas.  
 Virginia and Tennessee—M. D. Andes, secretary, Bristol, Tenn.  
 Vermont—H. M. Barrett, secretary, St. Albans.  
 West Virginia—J. B. Garvin, secretary, Charleston.  
 Wisconsin—J. L. Herbert, secretary, Stevens Point.

#### SPORTSMEN'S ORGANIZATIONS.

Arizona Sportsmen's Association—K. L. Hart, secretary, Tucson.  
 Arkansas State Sportsmen's Association—Paul R. Litzke, secretary, Little Rock.  
 California Game and Fish Protective Association—E. A. Mocker, secretary, San Francisco.  
 (California) Cooper Ornithological Club—C. R. Keyes, secretary, Berkeley.  
 Connecticut Association for the Protection of Fish and Game—George P. McLean, Simsbury, secretary.  
 Delaware Game Protective Association—J. Danforth Bush, secretary, Wilmington.  
 Game and Fish Protective Association of the District of Columbia—Dr. W. P. Young, secretary, Washington.  
 Illinois Fish and Game Protective Association—H. A. Sullivan, secretary, Chicago.  
 Illinois State Sportsmen's Association—Edward Bingham, secretary, Chicago.  
 Iowa State Sportsmen's Association—L. D. Crissman, secretary, Ottumwa.  
 Kentucky Field Trials Club—Dr. F. W. Samuel, secretary, Louisville, Ky.

Kentucky Fish and Game Club—Hamilton Griswold, secretary, Louisville.

Maine Ornithological Society—Arthur H. Norton, secretary, Westbrook.

Maine Sportsmen's Fish and Game Association—Col. E. C. Farrington, secretary, Augusta.

Maryland State Game and Fish Protective Association—Oregon M. Dennis, secretary, Baltimore.

Massachusetts Central Committee for the Protection of Fish and Game—H. H. Kimball, secretary, Boston.

Massachusetts Fish and Game Protective Association—H. H. Kimball, secretary, Boston.

Rod and Gun Club of Massachusetts—W. C. Thairiwall, secretary, Boston.

Massachusetts Sportsmen's Association—F. B. Crowninshield, secretary, Boston.

Michigan State Game and Fish Protective Association—R. F. Woodliff, secretary, Jackson.

Minnesota Game and Fish Protective Association—William L. Tucker, secretary, Duluth.

Minnesota Hunters' and Anglers' Protective Association—C. S. Brown, secretary, Minneapolis.

Missouri State Game and Fish Protective Association—Frank Cunningham, secretary, St. Joseph.

Missouri Sportsmen's Game and Fish Protective League—A. J. Dienst, secretary, St. Louis.

Montana Fish and Game Protective Association—A. L. Palmer, secretary, Helena.

Nebraska Ornithologists' Union—E. H. Jones, secretary, Dunbar.

New Jersey State Sportsmen's Association—Marshall Herrington, secretary, Belgrove drive, Arlington, N. J.

New York Association for the Protection of Game—Robert B. Lawrence, secretary, 76 Williams street, New York.

New York Fish, Game and Forest League—Ernest G. Gould, secretary, Seneca Falls.

North Dakota State Sportsmen's Association—G. E. Carpenter, secretary, Fargo.

(Ohio) Cuvier Club of Cincinnati—W. J. Lawler, secretary, 1380 Myrtle avenue, Cincinnati.

Ohio Fish and Game Protective Association—George C. Blankner, secretary, Columbus.

Oklahoma Territorial Sportsmen's Association—J. B. Wall, secretary, Ardmore.

Oregon Fish and Game Association—A. E. Gebhardt, secretary, Portland.

(Oregon) John Burroughs Bird Society—Clarence H. Gilbert, secretary, 1346 Yamhill street, Portland.

Sportsmen's Association of the Northwest—H. L. Morelans, secretary, Portland, Ore.

Pennsylvania State Sportsmen's Association—J. M. Runk, secretary, Chambersburg.

(Pennsylvania) Delaware Valley Ornithological Club—William H. Evans, secretary, 56 North Front street, Philadelphia.

(South Carolina) Western Carolina Game Protective Association—Charles F. Schwing, secretary, Greenville.

South Dakota State Sportsmen's Association—E. E. Aney, secretary, Springfield.

Texas Game Protective Association—Turner, E. Hubby, secretary, Waco.

Texas State Sportsmen's Association—George Tucker, secretary, Brenham.

Utah State Fish and Game Protective Association—George D. Alder, secretary, Salt Lake City.

Vermont Bird Club—George H. Ross, secretary, Rutland.

Vermont Fish and Game League—E. T. Bradley, secretary, Swanton.

Eastern Shore Game Protective Association of Virginia—Thomas W. Blackstone, secretary, Accomac.

West Virginia State Sportsmen's Association—Edward O. Bower, secretary, Sistersville.

Wisconsin Game Protective Association—August Plambeck, secretary, Milwaukee.

Dominion of Canada Trap Shooting and Game Protective Association—G. Easdale, secretary, Ottawa.

Province of Quebec Association for the Protection of Fish and Game—William J. Cleghorn, secretary, 4460 Sherbrook street, Montreal.

Sportsmen's Fish and Game Protective Association of the Province of Quebec—E. T. D. Chambers, secretary, Quebec.

#### FORESTRY ASSOCIATIONS.

#### NATIONAL ORGANIZATIONS.

American Forestry Association—Edward A. Bowers, secretary, New Haven, Ct.

International Society of Arboriculture—J. P. Brown, secretary, Chicago.

Society of American Foresters—George B. Seedworth, secretary, Washington, D. C.

#### STATE ORGANIZATIONS.

(Arizona) Salt River Valley Water Supply Protective Association—H. M. Chapman, secretary, Phoenix.

California Water and Forest Association—T. C. Friedlander, secretary, San Francisco.

(California) Sierra Club—Prof. W. R. Dudley, Stanford University.

Colorado Forestry Association—Jabez Norman, secretary, Denver.

Connecticut Forestry Association—Miss Mary Winslow, secretary, Weatogue.

Massachusetts Forestry Association—Edwin A. Start, secretary, Boston.

Michigan Forest, Game and Fish Protective Association—R. P. Alden, secretary, Saginaw.

Minnesota State Forestry Association—William T. Cox, secretary, Lowry.

Nebraska Park and Forest Association—L. D. Stilson, secretary, York.

(New Hampshire) Society for the Protection of New Hampshire Forests—Joseph T. Walker, secretary, Concord.

(New York) Forestry, Water Storage and Manufacturing Association of the State of New York.

New York State Fish, Game and Forest League.

(New York) Association for the Protection of the Adirondacks—Henry S. Harper, secretary, New York.

North Carolina Forestry Association—W. W. Ashe, secretary, Chapel Hill.

North Dakota State Sylvan Society—Miss Mary G. Buck, secretary, Lakota.

Oregon Forestry Association—Martin W. Gorman, secretary, Portland.

(Oregon) The Mazamas—Martin W. Gorman, secretary, Portland.

Pennsylvania Forestry Association—Mrs. John P. Lundly, secretary, Philadelphia.

(Pennsylvania) Franklin Forestry Society—W. E. Bowers, secretary, Chambersburg.

Tennessee Forest Association—L. C. Glenn, secretary, Vanderbilt University, Nashville.

Utah Forestry Association—A. C. Nelson, secretary, Salt Lake City.

Wyoming State Forest Association—W. C. Deming, secretary, Cheyenne.

Washington Forestry Association—Edmond S. Meany, secretary, Seattle.

## HORTICULTURAL AND KINDRED SOCIETIES.

### NATIONAL ORGANIZATIONS.

American Association of Nurserymen—G. C. Seager, secretary, Rochester, N. Y.

American Carnation Society—Albert M. Herr, secretary, Lancaster, Pa.

American Cranberry Growers' Association—A. J. Rider, secretary, Hammononton, N. J.

American Fruit Growers' Association—J. C. Mangan, secretary, Bridge, Minn.

American Pomological Society—Prof. John Craig, secretary, Ithaca, N. Y.

American Rose Society—Leonard Barron, secretary, 136 Liberty street, New York.

Chrysanthemum Society of America—F. H. Lemon, secretary, Richmond, Md.

Cider and Cider Vinegar Association of the Northwest—George Miltenburger, secretary, St. Louis, Mo.

Eastern Nurserymen's Association—William Pitkin, secretary-treasurer, Rochester, N. Y.

Farmers' Club of American Institute, Horticultural Section—Leonard Barron, secretary, 136 Liberty street, New York.

Mississippi Valley Apple Growers' Association—James Handly, secretary, Quincy, Ill.

Missouri Valley Horticultural Society—Mrs. Harriet E. Chandler, secretary, Argentine, Kan.

National Apple Shippers' Association—A. Warren Patch, secretary, Boston, Mass.

Northwest Fruit Growers' Association—C. J. Sensel, secretary, Boise, Ida.

Peninsula Horticultural Society—Wesley Webb, secretary, Dover, Del.

Society of American Florists and Ornamental Horticulturists—William J. Stewart, secretary, Boston, Mass.

Southern Nurserymen's Association—Charles T. Smith, secretary and treasurer, Concord, Ga.

Western Association of Wholesale Nurserymen—E. J. Holman, secretary, Leavenworth, Kan.

#### STATE ORGANIZATIONS.

Arkansas State Horticultural Society—Ernest Walker, secretary, Fayetteville.

California State Floral Society—Mrs. H. P. Tricon, secretary, 814 Grove street, San Francisco.

Colorado State Horticultural Society—George E. Richardson, secretary, Alcott.

Connecticut Pomological Society—H. C. C. Miles, secretary, Milford.

Connecticut Horticultural Society—L. H. Mead, secretary, Hartford.

Florida State Horticultural Society—Stephen Powers, secretary, Jacksonville.

Georgia State Horticultural Society—Charles T. Smith, secretary, Concord.

Idaho State Horticultural Society—J. R. Field, secretary, New Plymouth.

Illinois State Horticultural Society—L. R. Bryant, secretary, Princeton.

Indiana Horticultural Society—W. B. Flick, secretary, Lawrence.

Iowa State Horticultural Society—Wesley Greene, secretary, Davenport.

Kansas State Horticultural Society—William H. Barnes, secretary, Topeka.

Kentucky State Horticultural Society—J. C. Hawes, secretary, Buechel.

Maine State Pomological Society—D. H. Knowlton, secretary, Farmington.

Maryland State Horticultural Society—J. B. S. Norton, secretary, College Park.

Massachusetts Fruit Growers' Association—Prof. S. T. Maynard, secretary, Northboro.

Massachusetts Horticultural Society—William P. Rich, secretary, Boston.

**Michigan State Horticultural Society**—E. Bassett, secretary, Fennville.

**Minnesota State Horticultural Society**—A. W. Latham, secretary, Minneapolis.

**Missouri State Horticultural Society**—L. A. Goodman, secretary, Kansas City.

**Montana State Horticultural Society**—C. W. H. Heldeman, secretary, Missoula.

**Nebraska State Horticultural Society**—L. M. Russell, secretary, Lincoln.

**New Hampshire Horticultural Society**—W. D. Baker, secretary, Quincy.

**New Jersey State Horticultural Society**—Henry I. Budd, secretary, Mount Holly.

**New Mexico Horticultural Society**—Jose D. Sena, Santa Fe.

**New York State Fruit Growers' Association**—F. E. Dawley, secretary, Fayetteville.

**Horticultural Society of New York**—Leonard Barron, secretary, 136 Liberty street, New York.

**North Carolina State Horticultural Society**—H. H. Hume, secretary, Raleigh.

**Ohio State Horticultural Society**—E. M. Woodard, secretary, Willoughby.

**Oklahoma Horticultural Society**—J. B. Thoburn, secretary, Guthrie.

**Oregon State Horticultural Society**—E. R. Lake, secretary, Corvallis.

**Pennsylvania Horticultural Society**—David Rust, secretary, Philadelphia.

**Pennsylvania State Horticultural Association**—Enos B. Engle, secretary, Waynesboro.

**Rhode Island Horticultural Society**—Charles W. Smith, secretary, Providence.

**South Carolina State Horticultural Society**—Charles E. Shamblyn, secretary, Clemson College.

**South Dakota State Horticultural Society**—N. E. Hansen, secretary, Brookings.

**Texas State Horticultural Society**—Samuel H. Dixon, secretary, Houston.

**Vermont Horticultural Society**—William Stuart, secretary and treasurer, Burlington.

**Virginia—State Horticultural Society**—S. L. Lupton, secretary, Winchester.

**Washington State Horticultural Society**—C. A. Tommson, secretary, Tacoma.

**West Virginia State Horticultural Society**—Fred E. Brooks, secretary, Morgantown.

**Wisconsin State Horticultural Society**—J. L. Herbst, secretary, Sparta.

**Wisconsin State Cranberry Growers' Association**—W. H. Fitch, secretary, Cranmoor.

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## BEEKEEPERS' ASSOCIATIONS.

National Beekeepers' Association—George W. York, secretary, Chicago, Ill.

California State Beekeepers' Association—F. E. Wells, secretary, Selma.

Colorado Honey Producers' Association—Frank Ranchfus, secretary, Denver.

Colorado State Beekeepers' Association—H. C. Moorehouse, secretary, Boulder.

Connecticut Beekeepers' Association.

Idaho State Beekeepers' Association—F. R. Fouch, secretary, Roswell.

Illinois State Beekeepers' Association—James A. Stone, secretary, Springfield.

Eastern Iowa Beekeepers' Association—W. A. Hay, secretary, Anamosa.

Michigan State Beekeepers' Association—E. B. Tyrell, secretary, Davison.

Minnesota State Beekeepers' Association—Mrs. W. S. Wingate, secretary, Station F, Minneapolis.

Missouri State Beekeepers' Association—W. T. Carey, secretary, Wakenda.

Nebraska Beekeepers' Association.

New Jersey Beekeepers' Association—George N. Wanser, secretary, Crawford.

New York State Association of Beekeepers' Societies—C. B. Howard, secretary, Romulus.

New York State Beekeepers' Association—J. H. Knickerbocker, secretary, Pleasant Valley.

Northeastern Ohio and Northwestern Pennsylvania Beekeepers' Association—Edward Jolley, secretary, Franklin, Pa.

South Dakota State Beekeepers' Association.

Southern East Tennessee Beekeepers' Association—W. J. Copeland, secretary, Fetzertown.

North Texas Beekeepers' Association—J. N. Hunter, secretary, Lake Creek.

Utah Beekeepers' Association—T. N. Elliott, secretary, Salt Lake City.

Vermont Beekeepers' Association—W. A. Larabee, secretary, Shoreham.

Washington State Beekeepers' Association—L. K. Freeman, secretary, North Yakima.

Wisconsin State Beekeepers' Association—Gus Dittmer, secretary, Augusta.

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## *The Presidential Election*

ELECTORAL AND POPULAR VOTES, PLURALITIES, NUMBER OF

CONGRESSMEN OF EACH PARTY ELECTED IN

EACH STATE, AND NAMES OF NEW

GOVERNORS ELECTED.

The national election, held November 8, 1904, resulted in the overwhelming victory of Theodore Roosevelt and Charles W. Fairbanks, the republican candidates for president and vice-president respectively, over the democratic candidates, Alton B. Parker and Henry G. Davis, by a plurality of more than 2,500,000 out of a popular vote of over 13,000,000. This plurality was the largest ever obtained by a party in the United States, the nearest approach to it being in the election of 1872, when Horace Greeley was defeated by 763,007 votes out of a total of about 6,500,000 cast. Roosevelt's vote was more than 400,000 in excess of the vote cast for McKinley in 1900, while there were 1,200,000 votes less cast for Parker than for Bryan.

In only three states—Georgia, Mississippi and South Carolina—was Parker's vote larger than Bryan's, and Roosevelt's smaller than McKinley's. In eight states—Alabama, Kentucky, Maine, Maryland, North Carolina, Tennessee, Texas and Virginia—both Parker and Roosevelt received fewer votes than Bryan and McKinley respectively. In Delaware, Massachusetts, Rhode Island and West Virginia, Parker's vote was larger than Bryan's and Roosevelt's larger than McKinley's. In the other 30, Roosevelt had more votes than McKinley, and Parker less votes than Bryan. In only 10 of these, however—Connecticut, Idaho, Nevada, New Jersey, New York, Pennsylvania, Utah, Vermont, Washington and Wyoming—did Roosevelt's gain over the McKinley vote exceed Parker's loss from the Bryan vote.

In the electoral college, Roosevelt received 336 votes; Parker only 140. Missouri, which usually goes democratic, at this election cast its 18 electoral votes for Roosevelt, and while Maryland partly made up for this loss by giving Parker seven of its eight electoral votes, Parker's vote was still 11 short of the total belonging to the solid south. In the latter state the one republican elector received a higher vote than any of the democratic electors, which gave that state to Roosevelt by popular vote. The vote cast for the third parties—meaning the Debs socialists, prohibitionists, populists and the socialist-labor party—was unusually large, amounting to almost 800,000, which is over 400,000 in excess of that received by these parties in 1900. Debs led the minor parties with 400,640 votes, against 87,814 in 1900. The tables given herewith were compiled especially for the American Agriculturist Year Book from the official report received from the secretary of state in each of the respective states.

## COMPARISON OF ELECTION RESULTS IN 1904 AND 1900.

State	Congressmen				Electoral votes			
	59th		58th		1904		1900	
	Dem.	Rep.	Dem.	Rep.	Dem.	Rep.	Dem.	Rep.
Alabama	9	—	9	—	11	—	11	—
Arkansas	7	—	7	—	9	—	8	—
California	—	8	3	5	—	10	—	9
Colorado	—	3	1	2	—	5	4	—
Connecticut	—	5	—	5	—	7	—	6
Delaware	—	1	1	—	—	3	—	3
Florida	3	—	3	—	5	—	4	—
Georgia	11	—	11	—	13	—	13	—
Idaho	—	1	—	1	—	3	3	—
Illinois	1	24	8	17	—	27	—	24
Indiana	2	11	4	9	—	15	—	15
Iowa	—	11	1	10	—	13	—	13
Kansas	—	8	—	8	—	10	—	10
Kentucky	9	2	10	1	13	—	13	—
Louisiana	7	—	7	—	9	—	8	—
Maine	—	4	—	4	—	6	—	6
Maryland	3	3	2	4	7	1	—	8
Massachusetts	3	11	4	10	—	16	—	15
Michigan	—	12	1	11	—	14	—	14
Minnesota	—	9	1	8	—	11	—	9
Mississippi	8	—	8	—	10	—	9	—
Missouri	7	9	15	1	—	18	17	—
Montana	—	1	—	1	—	3	3	—
Nebraska	—	6	1	5	—	8	—	8
Nevada	1	—	1	—	—	3	3	—
New Hampshire	—	2	—	2	—	4	—	4
New Jersey	1	9	3	7	—	12	—	10
New York	11	26	16	20	—	39	—	36
North Carolina	9	1	10	—	12	—	11	—
North Dakota	—	2	—	2	—	4	—	3
Ohio	1	20	4	16	—	23	—	23
Oregon	—	2	—	2	—	4	—	4
Pennsylvania	1	31	4	27	—	34	—	32
Rhode Island	1	1	1	1	—	4	—	4
South Carolina	7	—	7	—	9	—	9	—
South Dakota	—	2	—	2	—	4	—	4
Tennessee	8	2	8	2	12	—	12	—
Texas	16	—	16	—	18	—	15	—
Utah	—	1	—	1	—	3	—	3
Vermont	—	2	—	2	—	4	—	4
Virginia	9	1	9	1	12	—	12	—
Washington	—	3	—	3	—	5	—	4
West Virginia	—	5	—	5	—	7	—	6
Wisconsin	1	10	1	10	—	13	—	12
Wyoming	—	1	—	1	—	3	—	3
Total	136	250	177	206	140	336	155	292

POPULAR VOTE FOR PRESIDENT, 1904.

State	Roosevelt, Rep.	Parker, Dem.	Swallow, Pro.	Debs, Soc.	Watson, Pop.	Cor. regan, Soc.	Lab.
Alabama	22,472	79,857	612	853	5,051	—	—
Arkansas	46,860	64,434	993	1,816	2,318	—	—
California	205,226	89,294	7,380	29,535	—	—	—
Colorado	134,687	100,105	3,438	4,304	824	335	—
Connecticut	111,089	72,909	1,506	4,543	495	575	—
Delaware	23,714	19,360	607	146	51	—	—
Florida	8,314	27,046	5	2,336	1,605	—	—
Georgia	24,003	83,472	685	197	22,635	—	—
Idaho	47,783	18,480	1,013	4,949	353	—	—
Illinois	632,645	327,606	37,770	69,225	6,725	4,698	—
Indiana	368,289	274,345	23,496	12,013	2,444	1,598	—
Iowa	307,907	149,141	11,601	14,847	2,207	—	—
Kansas	212,955	86,174	7,306	15,869	6,253	—	—
Kentucky	205,277	217,170	6,609	3,602	2,511	536	—
Louisiana	5,205	47,708	—	995	—	—	—
Maine	64,437	27,630	1,510	2,106	338	—	—
Maryland	109,497	109,446	3,034	2,247	—	—	—
Massachusetts	257,822	165,746	4,279	13,591	1,296	2,359	—
Michigan	364,957	135,392	13,441	8,952	1,759	1,036	—
Minnesota	216,651	55,187	6,253	11,692	2,103	974	—
Mississippi	3,168	53,280	—	392	1,424	—	—
Missouri	321,447	295,847	7,181	13,008	4,225	1,875	—
Montana	34,932	21,773	635	5,676	1,520	208	—
Nebraska	138,558	52,921	6,323	7,412	20,518	—	—
Nevada	6,867	3,982	—	925	344	—	—
New Hampshire	54,179	33,995	749	1,090	83	—	—
New Jersey	245,138	164,550	6,838	9,582	3,704	2,676	—
New York	859,533	683,981	20,787	36,883	7,459	9,127	—
North Carolina	82,442	124,121	361	124	819	—	—
North Dakota	52,595	14,253	137	207	163	—	—
Ohio	600,095	344,675	19,339	36,260	1,392	2,633	—
Oregon	60,455	17,521	3,806	7,619	753	—	—
Pennsylvania	840,949	335,430	33,717	21,863	—	2,211	—
Rhode Island	41,605	24,839	768	966	—	488	—
South Carolina	22,271	52,863	—	22	1	—	—
South Dakota	72,083	21,969	2,965	3,138	1,248	—	—
Tennessee	105,369	131,653	1,889	1,353	2,491	—	—
Texas	51,242	167,200	4,292	2,791	8,062	421	—
Utah	62,446	33,413	—	5,767	46	—	—
Vermont	40,459	9,777	792	854	—	—	—
Virginia	46,450	80,638	1,382	56	359	218	—
Washington	101,504	28,098	3,229	9,975	669	1,592	—
West Virginia	132,608	100,850	4,413	1,572	99	—	—
Wisconsin	280,164	124,107	9,770	28,220	530	223	—
Wyoming	20,489	8,930	—	1,077	208	—	—
Total	7,646,838	5,081,068	255,319	400,640	107,037	33,943	—

## PRESIDENTIAL PLURALITIES.

State	1904		1900	
	Roosevelt	Parker	McKinley	Bryan
Alabama	—	57,485	—	41,619
Arkansas	—	17,574	—	36,342
California	115,932	—	39,770	—
Colorado	34,582	—	—	29,661
Connecticut	38,180	—	28,570	—
Delaware	4,354	—	3,671	—
Florida	—	18,732	—	20,693
Georgia	—	59,469	—	46,665
Idaho	29,303	—	—	2,216
Illinois	305,039	—	94,924	—
Indiana	93,944	—	26,479	—
Iowa	153,766	—	98,606	—
Kansas	125,781	—	23,354	—
Kentucky	—	11,893	—	7,975
Louisiana	—	42,503	—	39,438
Maine	36,807	—	28,613	—
Maryland	51	—	13,941	—
Massachusetts	92,076	—	81,369	—
Michigan	229,565	—	104,584	—
Minnesota	161,464	—	77,560	—
Mississippi	—	50,112	—	45,953
Missouri	25,600	—	—	37,830
Montana	13,159	—	—	11,773
Nebraska	85,637	—	7,822	—
Nevada	2,885	—	—	2,498
New Hampshire	20,184	—	19,314	—
New Jersey	30,588	—	56,899	—
New York	175,552	—	143,606	—
North Carolina	—	41,679	—	24,671
North Dakota	38,342	—	15,372	—
Ohio	255,420	—	69,036	—
Oregon	42,934	—	13,141	—
Pennsylvania	505,519	—	288,433	—
Rhode Island	16,766	—	13,972	—
South Carolina	—	30,592	—	43,657
South Dakota	50,114	—	14,986	—
Tennessee	—	26,284	—	23,557
Texas	—	115,958	—	146,164
Utah	29,033	—	2,133	—
Vermont	30,582	—	29,719	—
Virginia	—	34,188	—	30,215
Washington	73,406	—	12,623	—
West Virginia	31,758	—	21,022	—
Wisconsin	156,057	—	106,581	—
Wyoming	11,559	—	4,318	—
Total	3,050,939	506,469	1,440,918	590,927

## GOVERNORS ELECTED NOVEMBER 8, 1904.

State	Name	Party	Term begins
Colorado	Alva Adams	Democrat	Jan 10, '05
Connecticut	Henry Roberts	Republican	Jan 2, '05
Delaware	Preston Lea	Republican	Jan 19, '05
Florida	Napoleon B. Broward	Democrat	Jan 2, '05
Idaho	Frank R. Gooding	Republican	Jan 2, '05
Illinois	Charles S. Deneen	Republican	Jan 11, '05
Indiana	J. Frank Hanley	Republican	Jan 2, '05
Kansas	Edward W. Hoch	Republican	Jan 11, '05
Massachusetts	William L. Douglas	Democrat	Jan 5, '05
Michigan	Fred M. Warner	Republican	Jan 2, '05
Minnesota	John A. Johnson	Democrat	Jan 2, '05
Missouri	J. W. Folk	Democrat	Jan 2, '05
Montana	J. K. Toole	Democrat	Jan 4, '05
Nebraska	John H. Mickey	Republican	Jan 6, '05
New Hampshire	John McLane	Republican	Jan 2, '05
New Jersey	Edward C. Stokes	Republican	Jan 2, '05
New York	Frank W. Higgins	Republican	Jan 2, '05
North Carolina	Robert D. Glenn	Democrat	Jan 2, '05
North Dakota	E. Y. Sarles	Republican	Jan 2, '05
Rhode Island	George P. Utter	Republican	Jan 2, '05
South Carolina	D. C. Heyward	Democrat	Jan 2, '05
South Dakota	Samuel H. Elrod	Republican	Jan 3, '05
Tennessee	James B. Frazier	Democrat	Jan 15, '05
Texas	S. W. Lanham	Democrat	Jan 12, '05
Utah	John C. Cutler	Republican	Jan 2, '05
Washington	A. E. Mead	Republican	Jan 14, '05
West Virginia	Wm. M. O. Dawson	Republican	Mar 4, '05
Wisconsin	Robert M. LaFollette	Republican	Jan 2, '05
Wyoming	Bryan B. Brooks	Republican	Nov 9, '04

RATIO OF REPRESENTATION IN THE HOUSE OF REPRESENTATIVES.

From 1793 to 1905, as provided by constitution.....	30,000
From 1793 to 1803, based on census of 1790.....	33,000
From 1803 to 1813, based on census of 1800.....	33,000
From 1813 to 1823, based on census of 1810.....	36,000
From 1823 to 1833, based on census of 1820.....	40,000
From 1833 to 1843, based on census of 1830.....	47,700
From 1843 to 1853, based on census of 1840.....	70,680
From 1853 to 1863, based on census of 1850.....	93,420
From 1863 to 1873, based on census of 1860.....	127,381
From 1873 to 1883, based on census of 1870.....	131,425
From 1883 to 1893, based on census of 1880.....	151,912
From 1893 to 1903, based on census of 1890.....	173,901
From 1903 to 1905, based on census of 1900.....	194,182

## QUALIFICATIONS FOR VOTING.

In all the states, except four, the right to vote at general elections is restricted to males of 21 years of age and upward. Women are entitled to vote at school elections in several states. They are entitled by local law to full suffrage in the states of Colorado, Idaho, Utah and Wyoming.

State	Previous residence required				Registration and requirements as to citizenship
	In state	In county	In town	In precinct	
*Ala. ....	1 y	3 m	30 d	30 d	Yes; citizen of U. S. or alien who has declared intention.
*Ark. ....	1 y	6 m	30 d	30 d	No; citizen of U. S. or alien who has declared intention.
*Cal. ....	1 y	90 d	30 y	30 d	Yes; citizen by nativity, naturalization or treaty, effected 90 days before election.
*Col. ....	6 m	90 d	30 d	10 d	Yes; citizen or alien who has declared intention 4 mos. prior to election, either sex.
*Ct. ....	1 y	3 m	6 m	30 d	Yes; citizen of U. S. who reads constitution or statutes.
*Del. ....	1 y	3 m	1 m	30 d	Yes; citizen and paying county tax after age 22.
Fla. ....	1 y	6 m	—	8 d	Yes; citizen of U. S. or alien who has declared intention, paid capitation tax two yrs.
Ga. ....	1 y	6 m	—	—	Yes; citizen of U. S. who has paid all his taxes since 1877, except soldier or sailor.
*Ida. ....	6 m	30 d	3 m	—	Yes; citizen of U. S., male or female.
*Ill. ....	1 y	90 d	30 d	30 d	Yes; same as Florida. <sup>e</sup>
*Ind. ....	6 m	60 d	60 d	30 d	No; citizen of U. S. or alien who has declared intention and resided one year in U. S. and six months in state.
*Ia. ....	6 m	60 d	—	—	Cities of 3500; same as Fla.
*Kan. ....	6 m	30 d	30 d	30 d	Cities of 1st and 2d class; citizen of U. S. or alien who has declared intention. <sup>a</sup>
*Ky. ....	1 y	6 m	60 d	60 d	Cities of 3000; same as Fla.
L. ....	2 y	1 y	—	6 m	Yes; citizens who can read and write, or who pay taxes on \$300 worth of property, assessed in their own names, or whose father or grandfather was qualified to vote on Jan. 1, 1867.
*Me. ....	3 m	3 m	3 m	3 m	Towns of 500; same as Florida, and citizens who had the right to vote on Jan. 4, 1833, who were 60 years of age on that date, and can read constitution.

State	Previous residence required				Registration and requirements as to citizenship
	In state	In county	In town	In precinct	
*Md. ....	1 y	6 m	6 m	—	Yes; same as Florida.
*Mass. ....	1 y	6 m	6 m	6 m	Yes; citizen who can read constitution in English and write his name. <sup>e</sup>
*Mich. ....	6 m	20 d	20 d	20 d	Yes; citizen or *inhabitant who has declared intention under U. S. laws six months before election and lived in state 2½ years. <sup>e</sup>
*Minn. ....	1 y	10 d	10 d	10 d	Yes; citizen of U. S. or alien who has declared intention, and civilized Indians.
*Miss. ....	2 y	1 y	1 y	61 y	Yes; citizen of U. S. who can read or understand constitution, after Jan 1, 1892.
*Mo. ....	1 y	60 d	60 d	60 d	Cities of 100,000; citizen of U. S. or alien who has declared intention not less than one year or more than five before offering to vote.
*Mont. ....	1 y	30 d	30 d	30 d	Yes; same as Florida. <sup>e</sup>
*Neb. ....	6 m	40 d	10 d	10 d	Cities of 7000; citizen of U. S. or alien who has declared intention 30 days prior to election. <sup>e</sup>
*Nev. ....	6 m	30 d	30 d	30 d	Yes; same as Florida.
*N. H. ....	6 m	—	6 m	6 m.	No; same as Florida. <sup>e</sup>
*N. J. ....	1 y	5 m	—	—	Yes; same as Florida.
*N. Y. ....	1 y	4 m	30 d	30 d	Cities of 5000; same as California, except that women may vote at village elections on questions relating to tax or assessment providing they own property in the village.
N. C. ....	1 y	6 m	4 m	4 m	Yes; same as Florida.
*N. D. ....	1 y	6 m	—	90 d	Towns of 800; citizen of U. S., alien who has declared intention one year, and civilized Indian. <sup>†e</sup>
*Ohio ....	1 y	30 d	20 d	20 d	Cities of 1st and 2d class; same as Montana. <sup>e</sup>
Ore. ....	6 m	—	—	—	Yes; citizen of U. S. or alien who has declared intention one year preceding election.
Pa. ....	1 y†	—	—	2 m	Yes; citizen of U. S. at least one month, and if 22 years old or more must have paid tax within two years.
*R. I. ....	1 y	—	6 m	—	Non-taxpayers; same as Fla.

State	Previous residence required				Registration and requirements as to citizenship
	In state	In county	In town	In precinct	
S. C. ....	2 y	1 y	4 m	4 m	Yes; citizen by nativity or naturalization who can read and write any section of the constitution, and who has paid all taxes.
*S. D. ....	6 m	§ 30 d	10 d	10 d	Yes; citizen of U. S. or alien who has declared intention; civilized Indians. <sup>e</sup>
*Tenn. ....	—	—	—	—	Yes; citizen of U. S. who has paid poll tax of preceding year.
*Tex. ....	1 y	6 m	—	c	Cities of 10,000; citizen of U. S. or alien who has declared intention.
*Utah ....	1 y	4 m	60 d	—	Yes; citizen, either sex.
*Vt. ....	1 y	—	3 md	—	Freeman's oath; same as Florida except as to poll taxes.
*Va. ....	1 y	3 m	3 m	30 d	Yes; citizen of U. S.
*Wash. ...	1 y	90 d	30 d	30 d	Precincts of 250 voters; citizen of U. S. <sup>e</sup>
*W. Va. ...	1 y	60 d	—	c	No; citizen of the state.
*Wis. ....	1 y	—	10 d	10 d	Cities of 3000; citizen of U. S. or alien who has declared intention. <sup>e</sup>
*Wyo. ....	1 y	60 d	—	—	Yes; citizen of U. S., male and female.
Ariz. ....	1 y	30 d	30 d	30 d	Yes; citizen of U. S. by nativity or one who has declared intention or elected to become a citizen under 1848 and 1854 treaties with Mexico.
N. M. ....	6 m	3 m	30 d	30 d	Yes; same as Florida except as to poll taxes.
Okla. ....	6 m	60 d	60 d	30 d	No; same as North Dakota.

\*Australlian ballot law or a modifications of it in force. † Indian must have severed tribal relations two years next preceding election. ‡ Or, if, having previously been a qualified elector or native, he shall have removed and returned, then six months. § One year's residence in United States prior to erection required. <sup>a</sup> And females in school and city elections. <sup>b</sup> Clergymen are qualified after six months' residence in precinct. <sup>c</sup> Actual residence in the precinct or district required. <sup>d</sup> Three months' residence in the town required to vote for town representative and justice. <sup>e</sup> Women can vote in school elections.

#### NATURALIZATION LAWS.

The alien must declare upon oath, before a circuit or district court of the United States, or a district or supreme court of the territories, or a court of record of any of the states having com-



mon law jurisdiction, and a seal and clerk, two years at least prior to his admission, that it is his bona fide intention to become a citizen of the United States, and to renounce forever all allegiance and fidelity to any foreign prince or state, and particularly to the one of which he may be at the time a citizen or subject.

He must, at the time of his application to be admitted, declare on oath, before some one of the courts above specified, "that he will support the Constitution of the United States, and that he absolutely and entirely renounces and abjures all allegiance and fidelity to every foreign prince, potentate, state or sovereignty, and particularly, by name, to the prince, potentate, state or sovereignty of which he was before a citizen or subject," which proceedings must be recorded by the clerk of the court.

If it shall appear to the satisfaction of the court to which the alien has applied that he has resided continuously within the United States for at least five years, and within the state or territory where such court is at the time held, one year at least; and that during that time "he has behaved as a man of good moral character, attached to the principles of the Constitution of the United States, and well disposed to the good order and happiness of the same," he will be admitted to citizenship.

If the applicant has borne any hereditary title or order of nobility, he must make an express renunciation of the same at the time of his application.

## SENATORS WHOSE TERMS OF SERVICE EXPIRE

MARCH 3, 1905.

Name and state	Politics	Name and state	Politics
Aldrich, Nelson W., R. I.....	R	Gibson, Paris, Mont. ....	D
Ball, Lewis H., Del.....	R	Hale, Eugene, Me.....	R
Bard, Thomas R., Cal.....	D	Hawley, Joseph R., Ct.....	R
Bate, William B., Tenn.....	D	Kean, John, N. J.....	R
Beveridge, A. J., Ind.....	R	Kearns, Thomas, Utah.....	R
Burrows, Julius C., Mich.....	R	Lodge, Henry C., Mass.....	R
Clapp, Moses E., Minn.....	R	McComas, L. E., Md.....	R
Clark, Clarence D., Wyo.....	R	McCumber, P. J., N. D.....	R
Cockrell, F. M., Mo.....	D	*Money, H. D., Miss.....	D
Culbertson, Charles A., Tex...D	D	Proctor, Redfield, Vt.....	R
Daniel, John W., Va.....	D	Quarles, J. V., Wis.....	R
Depew, Chauncey M., N. Y....R	R	Scott, Nathan B., W. Va.....	R
Dietrich, Charles H., Neb....R	R	Stewart, William M., Nev....R	R
Foster, A. G., Wash.....	R	Tallaferro, J. P., Fla.....	D

\*Renominated to succeed himself, August 6, 1903, for term ending March 3, 1911.

## *Close of the World's Fair*

The Louisiana Purchase Exposition at St. Louis was brought to a close December 1, 1904, after a run of seven months. The fair was fully as well patronized as had been expected, the total attendance for the seven months amounting to 18,741,073, against 23,529,212 for six months of the Columbian exposition at Chicago in 1893. Although the figures for the St. Louis fair are the smaller, it should be remembered that that city has now not half as large a population as Chicago had 11 years ago. As for the financial side of the fair, the managers are thoroughly satisfied with the outcome, inasmuch as they realized enough to pay back the government loan of \$4,600,000 and to settle all other claims against the association, which is about all that is hoped for in an exposition. The total receipts for admissions and concessions aggregated nearly \$10,000,000, while in the case of the Chicago fair they amounted to \$14,325,900.

As for the exposition itself, it was remarkable more, perhaps, for its size than its quality. There was a lack of harmony in the architecture of the buildings, a thing in which the Columbian exposition particularly excelled, and the scenic effects were not as striking as at Chicago, where there was a beautiful blending of the architectural with the natural in the shape of landscape gardening. The lagoons in a way made up for this, but had not quite the same charm.

At the Centennial at Philadelphia in 1876, machinery was given the foremost display as being the branch of industry of growing prominence at the time, and at Chicago a special showing was made of electricity, railroads and mining. No one branch of industry was featured at the St. Louis fair, but this was made up for by the fine position accorded to education and social economy; in this respect the fair just closed surpassed all that have so far been held. Much care was exercised in the preparation of the transportation department, and the exhibits made were most interesting, particularly so was the display of locomotives, showing the development of that machine from the time of its earliest invention to the latest examples. The Pike offered its innumerable international attractions and interesting sights and diversions were to be found there. After all is said, however, it must be admitted that the St. Louis fair was not received with the enthusiasm from the press and the people that had been looked for and that it really deserved. The fair came too soon after the Chicago fair to receive its full share of appreciation.

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**National and State Officers**

## NATIONAL OFFICERS.

	Salary
President, Theodore Roosevelt of New York.....	\$50,000
Vice-President, vacant.	8,000

## THE CABINET.

Secretary of State, John Hay of Ohio.  
 Secretary of Treasury, Leslie M. Shaw of Iowa.  
 Secretary of War, William H. Taft of Ohio.  
 Attorney-General, William H. Moody of Massachusetts.  
 Postmaster-General, Robert J. Wynne of Pennsylvania.  
 Secretary of Navy, Paul Morton of Illinois.  
 Secretary of Interior, Ethan A. Hitchcock of Missouri.  
 Secretary of Agriculture, James Wilson of Iowa.  
 Secretary of Commerce and Labor, Victor H. Metcalf of California.

Each member of the Cabinet receives a salary of \$8000.

## OUR STATES AND TERRITORIES.

## ALABAMA, "COTTON PLANTATION STATE."

Governor, William D. Jelks.....	\$5,000
Lieutenant-Governor, Dr. R. M. Cunningham .....	(per day) 4
Secretary of State, J. T. Heflin.....	1,800
Treasurer, J. Craig Smith .....	2,100

## ALASKA, "UNCLE SAM'S ICE-BOX."

Governor, John G. Brady.....	\$5,000
Surveyor-General and Secretary, William L. Distin.....	4,000

## ARIZONA, "THE SUNSET LAND."

Governor, Alexander O. Brodie.....	\$3,000
Secretary of State, Isaac T. Stoddard .....	(and fees) 1,800
Treasurer, Isaac M. Christy .....	2,500

## ARKANSAS, "THE BEAR STATE."

Governor, Jeff Davis .....	\$3,000
Secretary of State, O. C. Ludwig.....	2,250
Treasurer, H. C. Tipton .....	2,250

## CALIFORNIA, "THE GOLDEN STATE."

Governor, George C. Pardee.....	\$6,000
Lieutenant-Governor, Alden Anderson .....	(per day) 10
Secretary of State, C. F. Curry .....	3,000

## COLORADO, "THE CENTENNIAL STATE."

Governor, Alva Adams .....	\$5,000
Lieutenant-Governor, Jesse F. McDonald.....	1,000
Secretary of State, James Cowle.....	3,000

## CONNECTICUT, "LAND OF STEADY HABITS."

Governor, Henry Roberts .....	\$4,000
Lieutenant-Governor, Rollin S. Woodruff .....	500
Secretary of State, Theodore Bodenwein .....	1,500
Treasurer, James F. Walsh .....	1,500

## DELAWARE, "THE DIAMOND STATE."

Governor, Preston Lea .....	\$2,000
Lieutenant-Governor, I. Thomas Parker.....	(fees) —
Treasurer, Thomas N. Rawlins .....	(and fees) 1,450

## DISTRICT OF COLUMBIA.

## NATIONAL CAPITAL—WASHINGTON.

Commissioner, Henry B. F. Macfarland.....	\$5,000
Commissioner, Henry L. West .....	5,000
Commissioner, Major John Biddle.....	5,000

## FLORIDA, "THE EVERGLADE STATE."

Governor, Napoleon B. Broward .....	\$3,500
Secretary of State, H. Clay Crawford.....	2,500
Treasurer, W. V. Knott.....	2,500

## GEORGIA, "THE EMPIRE STATE OF THE SOUTH."

Governor, J. M. Terrell .....	\$5,000
Secretary of State, Phillip Cook .....	2,000
Treasurer, Robert E. Park .....	2,000

## IDAHO, "THE GEM OF THE MOUNTAINS."

Governor, Frank R. Gooding .....	\$5,000
Lieutenant-Governor, B. L. Steeves .....	—
Secretary of State, Will H. Gibson.....	2,400

## ILLINOIS, "THE PRAIRIE STATE."

Governor, Charles S. Deneen .....	\$6,000
Lieutenant-Governor, L. Y. Sherman .....	1,000
Secretary of State, James A. Rose .....	3,500
Treasurer, Len Small .....	3,500

## INDIANA, "THE HOOSIER STATE."

Governor, J. Frank Hanley .....	\$5,000
Lieutenant-Governor, Hugh T. Miller .....	1,000
Secretary of State, Daniel E. Storms .....	6,500
Treasurer, Nathaniel U. Hill .....	6,500

## INDIAN TERRITORY.

Governor, T. M. Buffington .....	\$1,500
Lieutenant-Governor, Washington Swimmer .....	600
Secretary of State, J. T. Parks .....	1,060

## IOWA, "THE HAWKEYE STATE."

Governor, Albert B. Cummins .....	\$5,000
Lieutenant-Governor, John Herrlott .....(per session)	1,100
Secretary of State, William B. Martin.....	2,200
Treasurer, G. S. Gilbertson .....	2,200

## KANSAS, "THE SUNFLOWER STATE."

Governor, Edward W. Hoch .....	\$3,000
Lieutenant-Governor, D. J. Hanna .....	1,000
Secretary of State, J. R. Burrow .....	2,500
Treasurer, T. T. Kelly .....	2,500

## KENTUCKY, "THE BLUE GRASS STATE."

Governor, J. C. W. Beckham .....	\$6,500
Lieutenant-Governor, William P. Thorne.....(per day)	5
Secretary of State, H. V. McChesney .....	3,000
Treasurer, Henry M. Bosworth .....	3,600

## LOUISIANA, "THE PELICAN STATE."

Governor, Newton C. Blanchard.....(and house)	\$5,000
Lieutenant-Governor, Jared T. Landers .....	1,500
Secretary of State, John T. Michel .....(and fees)	1,800
Treasurer, James M. Smith .....	2,500

## MAINE, "THE PINE TREE STATE."

Governor, William T. Cobb .....	\$2,000
Secretary of State, Byron Boyd .....	1,500
Treasurer, Oramandel Smith .....	2,000

## MARYLAND, "THE OLD LINE STATE."

Governor, John Walter Smith .....	\$4,500
Secretary of State, Wilfred Bateman .....	2,000
Treasurer, Murray Vandiver .....	2,500

## MASSACHUSETTS, "THE BAY STATE."

Governor, William L. Douglas .....	\$8,000
Lieutenant-Governor, Curtis Guild, Jr. ....	2,000
Secretary of State, William M. Olin .....	3,500
Auditor, Henry E. Turner .....	3,500
Treasurer, Arthur B. Chapin .....	5,000

## MICHIGAN, "THE WOLVERINE STATE."

Governor, Fred M. Warner .....	\$4,000
Lieutenant-Governor, Alexander Maitland .....	—
Secretary of State, George A. Prescott, .....	800

## MINNESOTA, "THE NORTH STAR STATE."

Governor, John A. Johnson .....	\$5,000
Lieutenant-Governor, Ray W. Jones .....	—
Secretary of State, Peter E. Hanson .....	3,500

## MISSISSIPPI, "THE BAYOU STATE."

Governor, J. K. Vardaman .....	\$3,500
Secretary of State, J. W. Power .....	—
Treasurer, W. J. Miller .....	—

## MISSOURI, "THE BULLION STATE."

Governor, J. W. Folk .....	\$5,000
Lieutenant-Governor, J. C. McKinley .....	1,000
(and \$7 per diem during sessions)	
Secretary of State, J. E. Swanger .....	3,000

## MONTANA, "THE BONANZA STATE."

Governor, J. K. Toole .....	\$5,000
Lieutenant-Governor, E. C. Norris .....	(per day) 10
Secretary of State, A. N. Yoder .....	3,000
Treasurer, J. R. Rice .....	3,000

## NEBRASKA, "THE ANTELOPE STATE."

Governor, John H. Mickey .....	\$2,500
Lieutenant-Governor, Edmund G. McGilton .....	(per diem) —
Secretary of State, A. Galusha .....	2,000
Treasurer, Peter Mortensen .....	2,500

## NEVADA, "THE SAGE BRUSH STATE."

Governor, John Sparkes .....	\$4,000
Lieutenant-Governor, Lemuel Allen .....	1,800
Secretary of State, W. G. Douglass .....	2,400
Treasurer, D. M. Ryan .....	2,400

NEW HAMPSHIRE, "THE GRANITE STATE."

Governor, John McLane .....	\$2,000
Secretary of State, Edward N. Pearson .....	3,000
Treasurer, Solon A. Carter .....	2,500

NEW JERSEY, "THE GARDEN STATE."

Governor, Edward C. Stokes .....	\$10,000
Secretary of State, S. D. Dickinson .....	6,000
Controller, J. Willard Morgan .....	6,000
Treasurer, Frank O. Briggs .....	6,000

NEW MEXICO, "THE LAND OF SUNSHINE."

Governor, Miguel A. Otero .....	\$3,000
Lieut.-Governor and Secretary of State, J. W. Reynolds...	1,800
Treasurer, J. H. Vaughn .....	3,000

NEW YORK, "THE EMPIRE STATE."

Governor, Frank W. Higgins .....	\$70,000
Lieutenant-Governor, Matthew Linn Bruce .....	5,000
Secretary of State, John F. O'Brien .....	5,000
Controller, Otto Kelsey .....	6,000
Treasurer, John Wallenmeier, Jr.....	5,000
Attorney-General, John Cunneen .....	5,000

NORTH CAROLINA, "THE OLD NORTH STATE."

Governor, Robert D. Glenn .....	\$4,000
Lieutenant-Governor, F. D. Winston.....	(per day) 6
Secretary of State, J. Bryan Grimes .....	(and fees) 2,000
Treasurer, B. R. Lacy .....	3,000

NORTH DAKOTA, "THE SIOUX STATE."

Governor, E. Y. Sarles .....	\$3,000
Lieutenant-Governor, David Bartlett .....	1,000
Secretary of State, E. F. Porter .....	2,000
Treasurer, A. Peterson .....	2,000

OHIO, "THE BUCKEYE STATE."

Governor, Myron T. Herrick .....	\$8,000
Lieutenant-Governor, W. H. Harding .....	800
Secretary of State, Lewis C. Laylin .....	4,000
Treasurer, W. S. McKinnon .....	4,500

OKLAHOMA, "THE BOOMERS' PARADISE."

Governor, Thompson B. Ferguson .....	\$3,000
Secretary of State, William Grimes .....	—
Treasurer, C. W. Rambo .....	—

## OREGON, "THE WEBFOOT STATE."

Governor, George E. Chamberlain .....	\$1,500
Secretary of State and Auditor, F. I. Dunbar .....	1,500
Treasurer, Charles S. Moore .....	800

## PENNSYLVANIA, "THE KEYSTONE STATE."

Governor, Samuel W. Pennypacker .....	\$10,000
Lieutenant-Governor, William M. Brown.....	5,000
Secretary of State, Frank M. Fuller.....(and fees)	4,000
Auditor-General, E. B. Hardenbergh .....	4,000
Treasurer, W. L. Mathues .....	8,000
Attorney-General, Hampton L. Carson .....	(and fees) 3,000
Secretary Board of Agriculture, N. B. Critchfield.....	3,000

## RHODE ISLAND, "LITTLE RHODY."

Governor, George P. Utter .....	\$3,000
Lieutenant-Governor, F. H. Jackson .....	500
Secretary of State, Charles P. Bennett.....	3,500
Treasurer, Walter A. Read .....	2,500

## SOUTH CAROLINA, "THE PALMETTO STATE."

Governor, D. C. Heyward .....	\$3,000
Lieutenant-Governor, John T. Sloan .....	(per day) 8
Secretary of State, Jesse T. Gantt .....	1,900
Controller, A. W. Jones .....	1,900
Treasurer, R. H. Jennings .....	1,900

## SOUTH DAKOTA, "THE COYOTE STATE."

Governor, Samuel H. Elrod .....	\$3,000
Lieutenant-Governor, J. E. McDougall .....	(per day) 10
Secretary of State, D. D. Wipf .....	1,800
Treasurer, C. B. Collins .....	1,800

## TENNESSEE, "THE VOLUNTEER STATE."

Governor, James B. Frazier .....	\$4,000
Secretary of State, John W. Morton .....	3,000
Treasurer, Reau E. Folk .....	3,500

## TEXAS, "THE LONE STAR STATE."

Governor, S. W. T. Lanham .....	\$4,000
Lieutenant-Governor, George D. Neal.....	(per day) 5
Secretary of State, J. R. Curl .....	2,000
Controller, J. W. Stephens .....	2,500
Treasurer, John W. Robbins .....	2,500



UTAH, "THE INTER-MOUNTAIN STATE."

Governor, John C. Cutler .....	\$4,000
Secretary of State, C. S. Tingey .....	3,000
Treasurer, James Christiansen .....	1,500

VERMONT, "THE GREEN MOUNTAIN STATE."

Governor, Charles J. Bell .....	\$1,500
Lieutenant-Governor, Charles H. Stearns .....	6
(per day, during session of legislature)	
Secretary of State, Frederick G. Fleetwood .....	1,700
Treasurer, John L. Bacon .....	1,700

VIRGINIA, "THE OLD DOMINION STATE."

Governor, A. J. Montague .....	\$5,000
Lieutenant-Governor, Joseph E. Willard .....	400
Secretary of Commonwealth, D. O. Eggleston.....	2,800
Auditor, Morton Marye .....	3,000
Treasurer, A. W. Harman, Jr.....	2,000
Commissiонер of Agriculture, George W. Kolner.....	2,000

WASHINGTON, "THE EVERGREEN STATE."

Governor, A. E. Mead .....	\$4,000
Lieutenant-Governor, Charles E. Coon .....	—
Secretary of State, Samuel H. Nichols .....	2,500
Treasurer, George E. Mills .....	2,000

WEST VIRGINIA, "THE PAN HANDLE STATE."

Governor, A. B. White (term expires March 4, 1905).....	\$5,000
Secretary of State, William M. O. Dawson .....	4,000
Auditor, A. C. Scherr .....	4,500
Treasurer, Peter Silman .....	2,500

WISCONSIN, "THE BADGER STATE."

Governor, Robert M. LaFollette .....	\$5,000
Lieutenant-Governor, James O. Davidson .....	1,000
Secretary of State, Walter L. Houser .....	5,000
Treasurer, John J. Kemp .....	5,000
Secretary Board of Agriculture, John M. True.....	1,200

WYOMING, "THE EQUALITY STATE."

Governor, Bryan B. Brooks .....	\$2,500
Secretary of State, Fenmore Chatterton .....	2,000
Auditor, Leroy Grant .....	2,000
Treasurer, William C. Irvine .....	2,000

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